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THE  
FIRST STEPS IN NUMBER.

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TEACHER'S EDITION.

PART I.—FIRST YEAR: NUMBERS ONE TO NINE INCLUSIVE.

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# FIRST STEPS IN NUMBER.

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## CHAPTER I.

### INTRODUCTION.

FOR a successful teaching of Number the teacher needs a great variety of objects. Blocks, splints, sticks, buttons, paper patterns, peas, beans, corn, spools, counters, shells, pebbles, horse-chestnuts, acorns, little tin plates, cups and saucers, tin money, are inexpensive and convenient to handle. For measurements, the teacher must have inch measures, foot rules, yard measures, a set of tin measures, a set of wooden or paste-board measures, a set of weights, and a pair of scales.

The teaching of Number as far as ten does not include the teaching of figures or other signs used in Arithmetic. No blackboard work is required of the child until after he has learned the numbers below ten. There is no difficulty in learning the figures along with the numbers; the difficulty comes in learning the numbers along with the figures. So it seems best to ignore the sign in favor of the thing.

It is more convenient in these exercises to have the children stand about a table on which are the objects to be handled, and many of the directions to the class are given with this arrangement in view. Let the children illustrate each story with objects, until it is evident that the relation between the numbers is as clearly seen without the objects as with them. Whenever a mental picture is formed, then the material is a hindrance to the teaching. Objects are a

means to an end, not the end. When an idea has been abstracted from the concrete, objects no longer have an office to perform, and should be put aside.

Ascertain the child's knowledge of Number before attempting any teaching of Number. Do this by skilful examination after the child feels at home in the school-room.

"Show me so many blocks (two blocks); so many beans; so many pebbles; so many spools; so many pencils."

"How many blocks have I in my hand? Come, whisper to me, if you know."

After each has whispered the number, ask the class:

"How many spools did you show me? how many beans? how many blocks?"

Let the class answer in concert, "Two," each time.

"Show me two buttons; two boys; two girls; two chairs."

"Put two blocks on the table in front of you; put two buttons on the table; take one button from the table and put it under the table; put one block under the table."

If *two* be known, try *three*, and so on until a number is reached which is not known.

Second step in the examination:

Require the child to show some number with which he is familiar. For example, *two*.

"Take one of your two blocks away. How many blocks have you left?"

"If I have two horses and sell one horse, how many horses shall I then have?"

"If I have two pencils and lose one pencil, how many pencils have I left?"

"You may put one block on the table in front of you. You may put another block with it. How many blocks have you now shown me?"

"One block and one block are how many blocks?"

"One horse and one horse are how many horses?"

"If I have one pencil and buy another, how many pencils shall I have?"

"If John has one cent and I give him another cent, how many cents will he have?"

"If Susie has one apron and mamma makes her another, how many aprons will Susie have?"

"Show me two buttons. Take the two buttons away. How many buttons remain?"

"If there are two cows in the barn and two cows are turned out in the yard, how many cows remain in the barn?"

"Show me two boxes. Put one block in each box. How many blocks does it take?"

"If these two little girls have each a doll, how many dolls have they together?"

"If these two little boys have each a sled, how many sleds have they together?"

"If there are two nests, and an egg in each nest, how many eggs are there?"

"If there are two stores, and a wagon at each store, how many wagons are there?"

"Show me two blocks. Put one of these two blocks in this box. Put another of your blocks in this box. How many boxes does it take?"

"If you have two hens, and each sits in a nest by herself, how many nests will it take?"

"If you have two spoons, and put each into a cup by itself, how many cups will it take?"

"If you have two cents, and give one each Sunday, how many Sundays can you give before the two cents will be given away?"

"If you have two pencils, and put each on a slate by itself, on how many slates will you put them?"

This outline for review is merely suggested as being searching in its nature. The aim should be solely to bring to light all the child's knowledge of Number, that the teacher may waste no time upon teaching him what he already knows. Do not hurry the examination. See that each child does for himself what you require, and does not imitate you or his neighbor in his work. Let each one answer for himself. Distinguish between the child's failure to understand your language and his inability to do what you require of him.

When the examination is complete, begin the teaching, and take the child where he is. As far as the experience of most primary teachers goes, few children know beyond *two* when they enter school for the first time. In most instances *three* will be the starting-point in teaching.

The ability to count up to a number does not constitute a knowledge of the number; so this must not be taken as the test of the child's knowledge. Do not permit counting by ones throughout the work in Arithmetic.

In the teaching of every number the order to be observed is as follows:

- I. The perception of the number.
- II. Analysis of the number.
- III. Drill upon facts discovered by analysis.
- IV. Comparison with smaller numbers.

## CHAPTER II.

### THE NUMBER THREE.

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#### § 1. THREE AS A WHOLE.

SHOW me two blocks. Put one more block with them.

Show me just as many spools; just as many pebbles; as many buttons; as many pencils; as many marks on the board; as many fingers.

You have shown me *three* fingers.

Show me three marks you have made on the board; three spools; three pencils; three pebbles; three shells; three little girls; three boys; three blocks.

How many blocks have you shown me? How many spools? How many splints? How many buttons?

I have a block, a spool, and a nut. How many things?

I have a box, a pen, and a stick. How many things?

Show me a button, a nut, and a shell. How many things have you shown me?

Show me three other things. Go to your desk and bring me three things.

Who thinks he has seen three men on the street? three boys playing ball? three houses in a row? three horses drawing a load? three street cars in a row? three people in a carriage? three things in the shop window?

Name three things you saw on your way to school; three things you had for breakfast; three things you can do; three things you can wear; three things you own; three persons you know.

## § 2. DISCOVERIES IN THREE.

You may take one block away from your three blocks. How many blocks have you left? What else can you take away from three blocks? How many blocks will remain? What other number can you take away? What will remain?

Who sees something else that can be done? I see Mary has put hers in two groups. How many in this group? (Two.) How many in this? (One.) What did Mary find in three? (Two blocks and one block.)

Who can find anything else?

## § 3. FACTS IN THREE.

### Two and One.

You may each take two blocks. Take one more block. How many blocks are two blocks and one block?

Show me two shells. Show me one more shell. How many shells have you shown me?

Show me two beads and one bead. How many beads are two beads and one more bead?

Show me two pegs and one more peg. How many pegs have you shown me?

In these envelopes are pretty things. I will give each of you an envelope if you will try to take out just two things, and then one more. Mary, tell me about your dustpans. Henry, about your rakes. Annie, about your combs. John, about your knives. Nellie, about your birds.

We will call these beautiful red strips of paper sticks of candy. Who will tell me about two sticks of candy and one more stick of candy?

If you take two splints (let the child take the two splints) and one more splint (let this be taken also), how many splints have you? Tell me that story.

Mary, if you take two buttons and then take one more, how many buttons have you? Tell me a story about that.

Tell me a story about two shells and one shell; about two pencils and one pencil.

I am going to call my blocks horses. If I have two horses and buy one more horse, I shall have three horses.

REMARK. In telling a story, always handle the blocks so as to illustrate what is being said, and require the pupil to do the same.

What will you call your blocks? You may tell me the story that two kitties and one kitty are three kitties.

### One and Two.

Show me one block. Show me two more blocks. How many blocks have you shown me?

Show me one wheel. Show me two more wheels. How many wheels are one wheel and two wheels?

If I have one beautiful butterfly, and find two more butterflies, how many butterflies shall I have?

How many owls are one owl and two owls?

If I have one shell and take two more shells, how many shells shall I have?

I will hold up one finger; now I will hold up two more fingers. How many fingers do I hold up?

I will take one piece of paper and then take two more pieces of paper. I shall then have three pieces of paper.

You may tell me a story like this with your blocks; with these buttons; with your fingers; with these nuts.

I will call my blocks birds. Here is one bird on a tree, and two more birds fly up on the same tree. Tell me how many birds are on the tree.

This is a dog running, and these are two little girls running after him. How many are running?

You may tell me a story about one and two. What will you call your blocks? Another story; another.

Tell me about one armful of wood and two armfuls of wood; one knife and two knives; one chair and two chairs; one tin horn and two tin horns; one whistle and two whistles; one paper-weight and two paper-weights.

If one child tells me a story about birds, and two others tell me stories about birds, how many tell me stories about birds?

If I write one word on the blackboard, and then write two more words on the blackboard, how many words do I write in all?

Daisy saw one dog on one side of the street this morning, and two more dogs the other side of the street. How many dogs did she see on the street?

On one twig is a white blossom and two pink blossoms. How many blossoms on the twig?

I have a woollen cap and two hats. How many things have I to wear on my head?

### Three minus One.

Show me three blocks. Do as I do. (Teacher puts one of her three blocks away.) How many have you left?

How many did you take away?

Show me your three blocks again.

Take one block away. How many have you now?

Show me your three blocks again.

I have three blocks on the table. I will put one block under the table. How many blocks have I on the table?

You may tell me a story about this. You may tell me a story with the splints; with the spoons; with the tin plates.



If I have three cows, and sell one, how many cows shall I have left?

If I have three beds to make, and make one, how many more beds shall I have to make?

If you have three cups to wipe, and wipe one, how many more cups will you have to wipe?

If you have three lines of *i*'s to write, and write one line, how many more lines must you write?

### Three minus Two.

Take three blocks. Give me two of them. How many have you left?

How many did you give me? I will give you back the two blocks.

Put two of your blocks behind you? How many remain before you?

How many did you take away?

Show me your three blocks again.

If I have three blocks, and give you two of my blocks, I shall have one block left.

You may tell me the same kind of a story with these buttons; with these beads; with these cents; with these keys.

Go to the board and make three marks. Erase two marks. How many remain?

Hold up three fingers. Shut two of the fingers. How many fingers remain up?

If mamma has three pies to make, and makes two, how many more must she make?

If two of the three pies get burned, how many will not be burned?

If three boys are in a line, and two boys step out of the line, how many remain in the line?

If you have three cents, and buy peanuts with two cents, how many cents will you then have?

If three sleds are going down the hill, and two tip over, how many go down the hill?

If there are three chairs up to the table, and you set back two chairs, how many chairs will remain up to the table?

### Exercise for Review.

If Jamie catches two mice one day and one mouse another day, how many mice will he catch in all?

I have in my hand a button, a stick, and a tin cent. How many things have I in my hand?

I have on my bureau a cologne-bottle, a pin-cushion, and a watch-stand. How many things have I on my bureau?

If I should put the watch-stand on the table, how many things would be left on the bureau?

If I should put the cologne-bottle on the mantel, how many things would remain on the bureau?

If I carried back the watch-case and cologne-bottle, how many things would there be on the bureau?

Our baby is two years old. How old will she be in a year?

Here are three boxes; if you put a block in each box, how many blocks will it take?

One boy and one boy are how many boys?

One chicken and one chicken are how many chickens?

One boy and one girl are how many persons?

Two kittens and a dog are how many animals?

A mouse comes into the room to find something to eat. A cat comes into the room to find what she can eat. How many animals are in the room? The cat and mouse both run into Mary's room, where she is sitting. How many are running then, do you think?

**Three divided by One.**

Show me three blocks.

Show me one of your three blocks.

Show me another of your three blocks.

How many have you shown me now?

Show me another of your three blocks.

How many one-blocks have you found in three blocks?

Take three buttons.

How many one-buttons can you find in three buttons?

Take three pencils.

How many one-pencils can you find in three pencils?

Mary may take three sticks, and give one to as many little girls as she has sticks for.

To how many little girls can she give them?

Take three buttons, and divide them in the same way.

To how many can you give them? Three cents; three apples; three beads.

Take three books. Put each book on a desk by itself.

How many desks does it take?

Take three pencils, and put each pencil on a slate by itself.

How many slates does it take?

Here are three spools. Put each one on a book by itself.

How many books does it take?

Take three splints, and put each one in a box by itself.

How many boxes does it take?

Take three buttons, and put each in a box by itself. How many boxes does it take?

Take three erasers. Put each one at a board by itself.

How many boards does it take?

Here are three little girls. Each one may go and sit at a desk by herself. How many desks does it take? How many chairs?

If there are three cups, and you put each in a saucer by itself, how many saucers will it take?

If you have three spoons, and put each one in a cup by itself, how many cups will have a spoon?

You may tell me a story like this about the spoons; another; another; another; another.

### Three Ones.

Here are three baskets. You may put a kitty in each basket. How many kitties are in all the baskets?

Here are three nests. Put an egg in each nest, and tell me how many eggs it takes.

Here are three little girls. Give each a pencil, and tell me how many pencils it takes.

Here are three plates. Put an apple on each plate, and tell me how many apples it takes.

Here are three posts, with a horse at each post. How many horses do you see?

Show me three pens, with a pig in each pen. How many pigs do you show me?

Show me three lamp-posts, with one lamp on each post. How many lamps do you show me?

Show me three dustpans, with a brush in each pan, and tell me how many brushes you show me.

If each brush has a handle, how many handles do three brushes have?

How many noses do three little boys have?

How many heads do three pins have?

How many handles do three pitchers have?

You may show me three boxes, with a button in each box. How many buttons do you show me?

You may show me three pieces of paper, with a pin in each paper. How many pins do you show me?

Show me three hats. How many bands on each hat?  
How many bands on the three hats together?

Show me three boys, each with a hat on his head. How many hats does it take for the three boys?

If I have three boxes, and a block in each box, how many blocks shall I have?

If I have three books, and each book has a picture in it, how many pictures shall I have to look at?

If these three boys each give me a cent, how many cents shall I have?

If there are three nests, and an egg in each nest, how many eggs are there?

If there are three stalls, and a horse in each stall, how many horses are there?

If there are three slates, and a pencil on each slate, how many pencils are there?

If there is a bed in each room, how many beds will there be in three rooms?

If there is a candle in each candle-stick, how many candles in three candle-sticks?

### Exercise for Review.

Charlie has two marbles and a kite. How many things has he?

Nellie has a kitten and two dolls. How many things has she?

Jamie bought three pencils this morning, but has broken one already. How many whole pencils has he?

There were three blossoms on this twig, but two have fallen off. How many are left?

There are three desks, with a pencil on each desk. How many pencils are there?

Here are three boys, each with an apple. How many apples are there?

Tom had three oranges, but gave one to each of his two little brothers. How many oranges had he then?

Two boys and one boy are how many boys?

One girl and two girls are how many girls?

Three cents minus two cents are how many cents?

Three blocks minus one block are how many blocks?

### Three minus Three.

Show me three marks on the board? Erase the three marks. How many remain?

Show me three pieces of crayon. Give me the three pieces of crayon. How many pieces have you?

Here are three buttons. Put them in your pocket. How many buttons do you see now?

Here are three kittens asleep. Wake the three kittens. How many are asleep now?

If you have three balls, and lose three, how many balls will you have left?

Tell me that story with these spools; these pictures; these pencils; these counters; these beans; these splints; these shells.

If there are three doves on the roof, and the three doves fly down on the ground, how many doves are on the roof then?

If there are three sticks of wood in the wood-box, and you put three sticks of wood in the stove, how many sticks remain in the box?

If there are three plums on your plate, and you eat the three plums, how many plums remain on your plate?

Tell me a story about three cents minus three cents; three knives minus three knives; three chairs minus three chairs; three quarts of berries minus three quarts of berries; three kittens minus three kittens; three leaves minus three leaves.

## § 4. COMPARISON OF THREE WITH NUMBERS KNOWN.

Take two blocks. How many more must you take to have three blocks?

Take two buttons. How many more must you take to have three buttons?

If you have two sticks of candy, how many sticks of candy must I give you that you may have three sticks?

If you jump twice, how many more times must you jump to jump three times?

Take one block. How many more must you take to have three blocks?

If I have three cents, and you have one, how many more have I than you?

Annie has one doll; Mary has three dolls. How many more dolls has Mary than Annie?

Jamie has one pencil; I have three pencils. How many more pencils have I than Jamie?

Harry has three words to copy; he has copied one. How many more words has he to copy?

I have a three-pint pail. If there is one pint of berries in it, how many more pints of berries can I put in it before it is full?

Show me one block. Show me, just below the one block, two blocks. Show me three blocks just below these.

Which row has the most blocks?

Which row has the least blocks?

How many more in the middle row than in the first row?

How many less than in the last row?

How many more in the three-row than in the one-row than in the two-row?

How many less in the one-row than in the two-row than in the three-row?

**Exercise for Review.**

Lay down one counter and one block. How many things have you laid down?

Lift up your foot three times.

How many cups at tea-time must be put out for you and me? Show me with these cups.

Take three steps forward.

Take two steps backward.

How many joints has your thumb? your forefinger?

I have put one cent on the table. Put enough with it to make three cents.

Nod your head twice and then once; how many times have you nodded it?

Shut your hand; open one finger; another finger. How many fingers have you now open? Open enough more to make three.

Show me three legs of a chair.

Hold out three fingers.

Show me two shells; now show me another. How many shells have you shown me?

Say "one" for each shell you have shown me.

Tap the table once; again; again. How many times have you tapped it?

How many hands have you?

How many eyes have you? ears? elbows?

Show me your wrists. How many have you?

Show me your cheeks. How many have you?

Show me your feet. How many have you?

Tell me two things you can do.

Tell me two things you did this morning; two things you saw coming to school.

Tell me two kinds of food you ate for breakfast; two things you always put on the table when you set it.



Show me two apples; put one in the drawer. How many apples are left?

Tell me a story about *two*; another; another; another; another; another.

You may copy the word **two** on your slate.

How many mouths have you? how many chins?

How many heads have you?

How many heads have two little boys?

How many tongues have two little boys?

If two little girls have each an apple, how many apples have both together?

If I had three pieces of pie, and should put each piece on a plate by itself, how many plates would it take?

If there are three of you at the table, and I give each of you a saucer of strawberries, how many saucers of strawberries will it take?

If I should give each of three little girls a flower, how many flowers would it take?

If I have a knife, a pencil, and a key in my pocket, how many things have I in my pocket?

How many children are two girls and one boy?

If one of these children should run away, how many would remain?

If one more should go home, how many would be left?

If I have three nuts, and eat three nuts, how many nuts shall I have?

Tell me a story about this; another; another; another; another; another.

If three birds have each a worm, how many worms have the birds together?

I have here two buttons. If I put one on a sleeve by itself, how many sleeves can I put them on?

Put a pencil on each of these slates (three). How many pencils does it take?

If you make a mark on your slate for each door in this room, how many marks will you make?

If you make a mark for each door in your room at home, how many marks must you make?

If you make a mark for each chair in your room, how many marks will you make?

Mary, you may make a mark on your slate for yourself and your little brother. How many are yourself and little brother? How many marks, then, will you make?

At home, I have two boxes on the top of my bureau, and a comb in each box; how many combs are there?

Clapp your hands twice, then once. How many times have you clapped your hands?

Three kittens are how many more than one kitten?

Three kittens are how many more than two kittens?

One duck and two ducks are how many ducks?

Two dogs are how many more than one dog?

Two chickens and one chicken are how many chickens?

A bird has how many wings? how many eyes? how many feet? how many tails?

If you have a knife, a fork, and a spoon, how many things have you?

How many more things are a knife and a fork than two spoons.

Write:

●  
one.

● ●  
two.

● ● ●  
three.

## CHAPTER III.

### THE NUMBER FOUR.

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#### § 5. FOUR AS A WHOLE.

Show me three fingers; open another finger.

Look at the number of fingers you have shown me.

Show me as many children; as many chairs; as many books; as many buttons; as many pieces of paper.

Here are four pieces of paper.

How many pieces of paper did you show me?

How many fingers do I show you? how many blocks?

Show me four blocks; four marks on the board; four erasers; four balls; four keys; four pencils; four i's; four boxes.

How many thumbs are your thumbs and my thumbs?

How many forefingers are your forefingers and my forefingers?

How many ears have these two little boys?

How many joints have both your thumbs?

Give the names of four boys you know.

Name something that has four legs; something else; something else; something else; something else.

Where have you seen four houses? four thimbles? four horses? four teams?

Name four things you like to do.

Shut your eyes, and see if you can pick out four blocks.

Open your eyes; how many have you? Try again.

Copy the word **four**.

## § 6. DISCOVERIES IN FOUR.

See what you can find out about four things.

I see you have taken one away from your four; how many have you left?

You have shown me four minus two; how many have you left?

How many have you taken away? how many are left?

Harry has shown us something. All put your blocks like his. (In groups of two.)

Mary has shown us something. Put your blocks like Mary's. (In groups of one and three.)

Here are four boxes. You may see if you can use them all in holding your blocks. How many have you put in each?

Try the same with four buttons; four sticks; four pebbles; four things from the table. •

Show me something else about four.

## § 7. FACTS IN FOUR.

**Three and One.**

Take three blocks. Take one more block. How many blocks have you?

Who will tell me a story about this?

Take three sticks. Take one more stick. How many sticks have you?

Who will tell me a story about this?

Each take an envelope. Take out four objects, and think of a story for three things and one more thing. Who is ready with a story?

If you nod your head three times, and then once, how many times do you nod your head?

If you have three cents and one cent, how many have you in all?

You may tell me about three bugs and one bug; three bicycles and one bicycle.

If there are three cows in a pasture, and I turn in another cow, how many cows in the pasture then?

If there are three street cars in a row, and another street car comes up to them, how many street cars are there then?

If you jump three feet, and then jump one more foot, how many feet will you jump in all?

If you bring in three armfuls of wood before breakfast, and one after, how many armfuls of wood will you bring in altogether?

If you have three dresses for your doll, and make one more dress, how many dresses will she then have?

You may tell me about three boys and one boy; three books and one book; three words and one word; three clocks and one clock; three lamps and one lamp.

### Exercise for Review.

If there is nothing on your desk, and I lay one block there, how many things will there be on your desk?

If you have no playthings, and I give you a ball and a top, how many playthings will you have?

A cat is playing with a mouse; how many animals are there? The kitten comes to join the fun; how many are there now? The mouse gets away and slips into a hole; how many are left? The kitten runs off to play; how many are left?

A dog and a pup come into the room together; how many animals?

Here is a couple of blocks; how many blocks?

Show me a couple of spools; a couple of buttons; a couple of pictures.

How many boots does it take to make a pair of boots?  
how many mittens to make a pair of mittens?

If you have a pair of boots and an odd boot, how many have you?

If you sell the odd boot, how many boots will you have?

If you wear out one of these boots, how many boots will you have left?

If you find another odd boot, how many boots will you have?

In a stable is a pair of horses and a single horse. How many horses are in the stable?

If the owner drives out with the pair, and his daughter with the single horse, how many horses will be left in the stable?

If there are four mittens on the radiator, to how many little boys do you think they belong?

If four stockings are hung up Christmas Eve, how many children will be up bright and early Christmas morning to see what is in the stockings?

If Santa Claus brings to each of these children a bag of candy, how many bags will he bring?

One block and one block are how many blocks?

One block and two blocks are how many blocks?

Three blocks and one block are how many blocks?

Two blocks and one block are how many blocks?

Two blocks minus two blocks are how many blocks?

Three blocks minus two blocks are how many blocks?

How many pairs of mittens does it take for one boy?  
how many mittens?

How many pairs of boots does it take for one boy? how many boots?

How many pairs of boots does it take for Harry and Ned?  
how many pairs of stockings? how many pairs of skates?

You may write the word **one** on your slates.

**One and Three.**

Take one block. Take three more blocks. How many blocks are one block and three more blocks?

Tell me a story about one shovel and three more shovels, Jamie; about one fan and three more fans, Annie; about one pail and three pails, Harry; about one bell and three bells, Alice; about one drum and three drums, Joseph.

(The objects referred to are of paper, and when not in use can be neatly packed away in separate envelopes.)

One chicken and three chickens are how many chickens?

One kitten and three kittens are how many kittens?

One boy and three girls are how many children?

Tell me a story about one dove and three doves.

Who has a story for one and three are four? another? another? another?

**Four minus One.**

Put one of your four blocks under the table.

How many have you left?

Tell me a story about four blocks minus one block; four books minus one book; four apples minus one apple; four button-hooks minus one button-hook; four knives minus one knife; four boxes minus one box.

If one wheel should come off a carriage, how many wheels would be left?

If a dog hurts one of his legs, on how many legs does he walk?

**Exercise for Review.**

How many fingers do I hold up? (Four.) Now? (Three.) Now? (Two.)

How many blocks do I show you? (Four.) How many marks on the board? (Two.) How many pieces of paper? (Three.)

(Teacher shows two blocks and one block.)

How many here? (Touching two.)

How many here? (Touching one.)

Tell me what you see, then.

(I see two blocks and one block.)

Who sees two blocks and one block?

How many blocks are two blocks and one block?

Read, then, what I show you.

(Teacher shows a group of two and a single block; then slowly brings the two groups together, while the child reads, Two blocks and one block are three blocks.)

Read the same with these spools.

(Two spools and one spool are three spools.)

With these buttons; with these cups.

Read what I show you now.

(Three splints and one splint are four splints.)

Now.

(Three boxes and one box are four boxes.)

Now.

(One shell and one shell are two shells.)

These exercises are very important in training the eye to quick and accurate seeing.

### Four minus Three.

Take four blocks.

Put three of your four blocks under the table; how many remain?

If I have four plums, and eat three plums, how many plums have I left?

If George has four tops, and three will not spin, how many will spin?

If there are four pencils on the table, and three fall off, how many remain on the table?



Four boys are on one sled; three get tipped off; how many remain on the sled?

Four cards are on a shelf; three fall off; how many remain on the shelf?

Make four marks on the board; rub out three; how many are left?

Four postage stamps are in the drawer; I use three; how many are left?

If you have four cents, and buy a three-cent postage stamp, how many cents have you left?

Tell me a story about four minus three.

### Exercise for Review.

Tell me a story about four minus one; three minus one; two minus one; one minus one; three minus two; two minus two; three minus three.

Johnnie has three words written on his slate, and Bennie two; which has more? how many more?

Bennie and Ned had each a pair of mittens; Bennie lost one of his mittens and his mother knit another pair for him; which had the more mittens then? how many more?

A dog, a boy, his sled, and a girl on the sled, are how many?

A boy left his coat on the chair, his hat on the table, and his book on the floor; how many things did he have to pick up and put in place?

There is a clock, a vase, a picture, and a large shell on my shelf; I remove the clock, the vase, and the picture; how many things remain on my shelf? I put back the clock and the vase; how many things are then on my shelf?

**Two and Two.**

Take two blocks. Take two more blocks. How many are two blocks and two blocks?

You may choose the objects that you wish to talk about, and tell me a story about two things and two more things.

Your two hands and my two hands are how many hands?

Your mittens and my mittens are how many mittens?

You may call your blocks tin pails, and tell me a story about two tin pails and two tin pails; tell me about two cows and two cows; two cups and two cups; two forks and two forks; two chairs and two chairs; two pins and two pins; two pictures and two pictures; two bells and two bells; two fans and two fans.

Take a couple of buttons; take two more buttons. How many buttons have you?

One boy had two tops; another had two balls. How many playthings had they together?

If they exchanged a ball and a top, how many playthings would each have?

How many would they have together?

Here is a cup and saucer, and here is a cup and saucer; how many cups? how many saucers? how many cups and saucers together?

**Four minus Two.**

Hold up four fingers; shut down two; how many remain up?

Show me four buttons; cover up two; how many remain in sight?

Here are four dogs; you may have two; how many have I?

Here are four spoons; we will put two away; how many remain?

Show me four blocks; take two away; how many have you? Tell me a story about this; another; another.

If there were four buttons to sew on your boot, and mamma sews on two, how many more will there be to sew on?

If you have four cents, and buy a two-cent postage stamp, how many cents have you left?

If you have four errands to do, and do two of them, how many have you left to do?

### Exercise for Review.

Show me three splints; how many times can you take one away before they are all gone?

Show me two splints; how many times can you take one away before they are all gone?

Four boys start off for some fun, and two get angry; how many have the fun?

Four little girls have a party; two play with dolls, and the rest play company. How many play company?

Tell me two things they talk of.

Tell me three games you can play.

Dates, figs, raisins, and prunes; how many kinds of fruit?

Three sparrows are taking a bath in a fountain, and one sparrow is on the edge of the fountain; how many more sparrows are taking a bath than are on the edge of the fountain?

A cat, two kittens, and a mouse are how many animals? The mouse runs away; how many animals are left? The cat runs after the mouse; how many are left? One kitten runs off; how many then remain?

What is left when three cents are taken from four cents? two spools from four spools? one button from four buttons? three oranges from three oranges? three pies from four pies?

**Four divided by Two.**

In four cents how many two cents?

There are four doves, two in a nest; how many nests?

There are four stockings; how many pairs?

I have four mittens; how many pairs?

If you have four boots, how many pairs have you?

There are four door-knobs, two on a door; how many doors?

If there are four kittens, two on a mat, how many mats?

I see four blinds, two on each window; how many windows?

I have four apples, two on a plate; how many plates?

There are four children, two at a desk; how many desks?

I have four cents; how many apples can be bought at two cents apiece?

There are four trunk-handles; how many trunks?

I have four sticks of candy, and give them to two children, giving the same number to each; how many sticks does each child receive?

There are four pillows, two on a bed; how many beds?

Take two blocks from your four blocks just as many times as you can; how many twos do you find in four?

**Exercise for Review.**

A bookseller had four rows of books in his window; one row tumbled off; how many rows remained?

He then took down two more rows; how many were left?

Afterward he put back the three rows; how many rows were there then?

Charley gets a cent for every paper he sells; how many cents will he get for selling three papers?

Harry has four cents; he spends one cent, and then he earns another; how many cents has he?

Tom has two cents and spends one, then earns one; how many cents has he?

Mary has four cents and spends two cents, and then earns two more; how many cents has she?

If Ed had one cent and should earn three more cents, and then spend three cents, how many cents would he have?

If I had some pencils on my desk and should give you three, then get three from the library, how many more pencils would I have on my desk than before? If I gave you four, and then got three from the library, how many less would I have on my desk?

If you have some money and spend four cents, then I give you two cents, have you more or less money than at first? If you spent two cents, and I should give you four, would you have more or less money than at first?

### Two Twos.

Show me two blocks; another two blocks.

How many blocks in all?

Here are two buttons; take two more buttons; how many have you?

Show me two paper patterns; two more; how many paper patterns in all?

There are two sleeves to one dress; how many sleeves to two dresses?

There are two mittens in one pair; how many in two pairs?

There are two horses in one span; how many horses in two spans?

There are two covers to one book; how many covers to two books?

If there are two bottles to one inkstand, how many bottles to two such inkstands?

There are two blades to one knife; how many to two such knives?

How many hands have two boys? how many eyes? how many cheeks? how many ears? how many thumbs?

How many boots will it take for two boys?

How many pairs of boots will it take for two boys?

Two apples cost two cents each; how many cents do both cost?

If I buy two pencils at two cents each, how many cents do I pay?

Two pens cost two cents each; how many cents do both cost?

Two books cost two cents each; what do both cost?

### Exercise for Review.

You may take three blocks; arrange them all the ways you can. You may arrange three straight lines on the board all the ways you can; three dots on the board.

Point in three directions.

You may touch each one of three blocks and say "one" each time. How many times did you say "one"?

Do the same with two. How many times did you say "one"?

Do the same with four. How many times did you say "one"?

### Four minus Four.

Here are four blocks on the table; put four under the table. How many are left?

There were four lamp chimneys; four got broken. How many whole ones are left?

There were four apples in the drawer; four were taken out of the drawer. How many were left in the drawer?

There were four poor i's on a slate; the teacher rubbed out four poor i's. How many were left to be seen?

There are four books to cover; I cover four. How many remain to be covered?

Four men were in the post-office; four men left the post-office. How many men were in the post-office then?

Four boys were turning summersaults; the recess-bell rang, and four boys went into school. How many boys were left turning summersaults?

Four girls were making wreaths; four girls went in to dinner. How many were left making wreaths?

### Four divided by One.

Here are four cents; see how many pictures at a cent apiece you can buy of George.

See how many tops at a cent apiece you can buy; how many pencils at a cent apiece; how many erasers at a cent apiece; how many sheets of paper at a cent a sheet.

I have four apples. To how many children can I give them if I give one to each child?

I have four sponges to lend. How many boys can I supply with sponges, giving one to each?

Grace has four more stories to write in her language book. If she writes one a day, how many days will it take to finish her book?

How many boys will four hats supply?

### Four Ones.

Here are four cups, each with a handle. How many handles in all?

Here are four knives. How many handles?

Here are four saucers, each with a cup. How many cups are here?

There are four boys, each with a hat. How many hats do you see?

There are four girls, each with a fan. How many fans have they?

I see four slates, each with a pencil. How many pencils can I see?

There are four books, with a book-mark in each. How many book-marks in all?

There are four tables, each with a cover. How many covers does it take?

#### § 8. COMPARISON OF FOUR WITH NUMBERS KNOWN.

I have four cents, Jamie has three. Who has more? How many more?

I have four pencils, Willie has three. How many more have I?

One hen has four chickens and another has three; how many more has the one than the other?

One man walks four miles an hour, another three; how many more miles does the first walk?

Tell me a story about this; another; another.

How many more legs has a dog than you?

A chair has four legs and two rockers; how many more legs than rockers has the chair?

A chair has one seat and four legs; how many more legs than seats?

My pencil cost two cents, my rubber four; how many more cents did my rubber cost?

Four books are how many more than three books? than one book? than two books?



How many dots have I shown you on the board? Put enough dots with it to make four. How many did you add to make four?

How many dots do I show you this time? Add enough to make four. How many did you add?

Add enough dots to this number to make four dots. How many did you add?

Erase enough of these four dots to leave one dot. Of these four dots to leave two. Of these four dots to leave three dots.

A two-cent coin is equal in value to how many one-cent coins? Then two two-cent coins are how many cents more than a one-cent coin? how many cents more than three one-cent coins?

One doll is how many less than four dolls? Two dolls are how many less than four dolls? Three dolls are how many less than four dolls?

A dog has four legs and one tail; how many more legs has he than tails?

A horse requires four shoes, and a boy two; how many less does the boy require than the horse?

A lamb has four legs, two eyes, and two ears; how many more legs than ears? how many more legs than eyes? how many more legs than eyes and ears together?

Four are how many more than three? than two? than one? than none?

Three are how many less than four? two are how many less than four? one is how many less than four?

Copy:

•  
one.

• •  
two.

• • •  
three.

• • • •  
four.

## CHAPTER IV.

### THE NUMBER FIVE.

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#### § 9. FIVE AS A WHOLE.

Show me four blocks; put one more with them. You have shown me five blocks.

Show me five fingers; five children; five marks on the board.

Make five *u*'s; five *i*'s.

Show me five words on the board that you know.

Show me five sticks; five pencils; five pieces of paper; five desks; five chairs.

Bring me five things from the play table; five things from my desk.

Tell me where you have seen five men; five horses; five cars; five birds.

What else have you seen five of?

Copy the word *five*.

#### § 10. DISCOVERIES IN FIVE.

Show me five blocks.

Put your blocks as I put mine.

Who can put his some other way? some other way? some other way?

I will take one of my five blocks away. You may do the same.

What other number can you take away? what other? what other?

**Exercise for Review.**

Tell me how many blocks are four blocks minus one block. (Teacher performs the operation with the blocks as child reads.)

Three blocks minus one block.

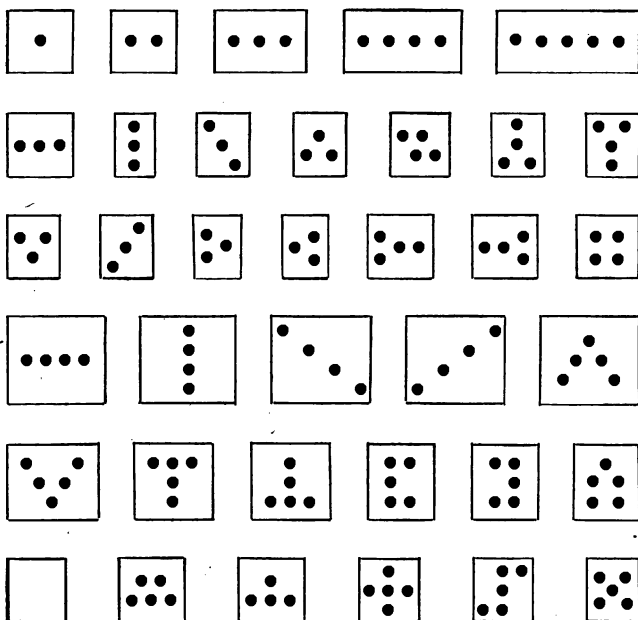
Two blocks minus one block.

One block minus one block.

Read this. (Teacher shows a number of blocks and takes away some of them. Child reads as above.)

Read this. (Four minus two are two.)

Tell me the number of dots as I point.



## § 11. FACTS IN FIVE.

**Four and One.**

Take four blocks. Take one more block. How many blocks are four blocks and one block?

Make four marks on the board. Make one more mark on the board. How many marks are four marks and one mark?

Find four bright stars on my chart. Find one more star. How many stars have you found?

Find four rings and one ring. How many rings?

Show me four blocks; one more block. How many have you in all?

Show me four buttons and one button. How many buttons?

I show you four fingers on one hand, and one finger on the other. How many fingers?

I have four bits of crayon in one hand, and one in the other. How many bits of crayon in all?

If I have four blocks, and you give me one more, how many blocks shall I have?

Give me four splints, please; now give me one more. How many have I?

How many horses are four horses and one horse?

How many cows are four cows and one cow?

How many days are four days and one day?

How many weeks are four weeks and one week?

How many months are four months and one month?

How many years are four years and one year?

How many boys are four boys and one boy?

I see four stars in the sky; one more shines out. How many stars can I see?

Four white clouds and one white cloud are how many clouds?

Four dogs are playing in the street, and another dog is looking on. How many dogs in all?

**One and Four.**

Show me one block; now show me four more. How many have you shown me?

One block and four more blocks are how many blocks?

Show me one button; show me four more buttons. How many buttons?

Tell me a story about one and four; another; another.

If there is one pig in the pen, and four more are put in the pen, how many will there be in the pen?

One boy is playing foot-ball, and four more come to play with him. How many boys are then playing foot-ball?

One fly is in the room; four more get in. How many flies are in the room?

One fly is in a spider's web; four more get caught. How many flies are in the web?

One hat was on the rack; four more are hung with it. How many hats are on the rack?

One little boy is looking out of the window; four more come to look out. How many are looking out of the window?

Annie finds one pin one day, and four pins the next. How many pins does she find altogether?

**Five minus One.**

Show me five blocks.

Put one of your five blocks under the table.

How many have you left?

Tell me that story.

You may call your blocks rabbits, and tell me that story.

Call yours dolls, and tell me a story like this. Who will tell me another? another? another?

School keeps Monday, Tuesday, Wednesday, Thursday, and Friday; five days in the week. If you are absent one day, how many days do you come?

There are five fingers on one hand, with the thumb. How many without the thumb?

You had five *i*'s on your slate; I rubbed one out. How many remained?

Five boys play ball; one does not like it, and goes off. How many boys are left?

Five persons are at a table; one is excused. How many remain?

Five boys are playing fox and geese; one boy is the fox, and the rest are geese. How many are geese?

I have five nuts, but one is bad. How many are good?

There are five teams in the street, and one moves off. How many are left?

Five boys are skating, and one falls down. How many go on?

There are five biscuits on a plate. If you eat one, how many remain?

### Five minus Four.

Show me five blocks.

Put away four.

How many have you left?

Tell me how many are five spools minus four spools.

There were five eggs in the basket; I have used four. How many are left?

There were five Noah's Arks in the shop window, and a man bought four. How many were left?

There were five leaves on a twig; four blew off. How many were left on the twig?

Five little girls are reading; four find a word they do not know. How many read on?

I have five mittens; four are alike. How many are odd?  
There were five geranium blossoms, but four faded. How many were left?

If I have five postal cards, and send away four, how many have I left?

If George cuts an apple into five pieces, and gives away four, how many has he left?

Sarah had five pieces of cake, and gave four pieces to some little beggar children. How many pieces had she left?

There are five things in a little tray on the table: a pencil, a rubber, a knife, a pen-holder, and a paper-cutter. If I take out the knife, the pencil, the rubber, and the pen-holder, how many remain?

### Exercise for Review.

Make five straight up-and-down lines on the board. Five right-and-left lines. Five slanting lines.

You may name the days of the week that you come to school. How many days?

Who can point to five things in the room? to five figures on the clock?

How many hands on the clock?

The long hand goes round the face each hour. How many times will it go round in two hours? in three hours? in four hours?

Ned goes to school four hours in the day, and Jamie one more hour. How many hours does Jamie go to school?

If one spool of cotton costs two cents, how many cents will two spools of cotton cost?

I can pick two quarts of berries in an hour; how many quarts can I pick in two hours?

If it takes me an hour to pick two quarts of berries, how many hours will it take to pick four quarts of berries?

There are four lamp-posts on the street, and one more is put up. How many lamp-posts are there? Show me this on the board, by drawing the lamp-posts.

I could see four boats on the water, and one more came in sight. Show me on the board how many were in sight then.

Four trees were in front of our house, but one had to be cut down. Show me on the board how many were left.

I know where there are two bird's nests, with two blue eggs in each nest. Show me how many eggs there are in both nests.

At the table this noon there were five plates, with an apple on each plate. Show me this on the board, and tell me how many apples there were.

Read what I show you.

Mary, show Nettie something to read; show Jennie something to read; show Cyrus something to read.

Annie, show Mary something to read; show Cyrus something to read.

If I draw one tree upright, on the board, and four lying down, how many trees do I draw altogether?

If I teach four classes in the morning, and one in the afternoon, how many classes do I teach?

There were three funny bonnets, and another funny bonnet came to join them. How many funny bonnets then?

One funny bonnet went off pouting. How many funny bonnets were left?

A little girl was under each funny bonnet. How many little girls were there?

If I cut one apple into two pieces, and then another into two pieces, how many pieces have I?

If I give two pieces away, how many pieces have I left?

I have here two pieces of paper; I will cut each into two equal pieces. How many equal pieces have I?



Show me a couple of pieces. Play these pieces are ducks. Show me a pair of ducks. Play they are dollar gold pieces. Show me two dollar gold pieces.

Show me one dollar gold piece, and three dollar gold pieces. How many dollar gold pieces?

Here is another dollar gold piece. Put it with those you have. How many dollar gold pieces have you now?

I have a stick which I will divide into four equal pieces. Show me two of the equal pieces. How many more equal pieces are there?

Call these four splints silver spoons. Put three in the spoon-holder, and tell me how many you have left.

Take one of the spoons from the spoon-holder, and tell me how many will remain in the spoon-holder.

### Three and Two.

Show me three spools; put two more with them. How many spools in all?

Give me three buttons; now give me two more. How many have I?

Shut your hand; open three fingers; now open two more. How many fingers are open?

Here are three knives and two forks. How many things are here?

Three cups and two saucers stand on the table. How many things on the table?

If Nettie comes to school three days and two days in the week, how many days does she come to school?

If there are three slices of bread on one plate, and two on another, how many on both plates?

There are three little kittens in the basket, and two on the floor. How many kittens in all?

Three cents and two cents are how many cents?

A three-cent stamp and a two-cent stamp cost how much? a three-cent pen and a two-cent pen? a three-cent ticket and a two-cent ticket? a three-cent paper and a two-cent paper?

It costs me three dollars to go to Nashua, and two dollars from Nashua home. How many dollars is my fare home?

Ned learns three words in the morning, and two in the afternoon. How many words does he learn?

Who can tell me a story about three soap-bubbles and two soap-bubbles? three honey-bees and two honey-bees? three boats sailing down the river and two boats sailing up the river?

### Two and Three.

This knife has two blades, and this has three; how many blades have both knives together?

Here are two pebbles in this hand, and three in this; how many in both hands together?

I make two dots; now I make three more. How many dots have I made?

If you make two *u*'s on the board, and then make three more, how many *u*'s will you make?

Show me that two sticks and three sticks are five sticks; that two pencils and three pencils are five pencils; that two fingers and three fingers are five fingers; that two boys and three girls are five children.

### Five minus Two.

Show me five blocks; take away two blocks. How many blocks remain?

Tell me that story.

Show me five splints; put back two of the splints. How many splints have you now?

Call your splints men, and tell me that there were five men, and that two walked away.

Call them lamp-posts, and tell me that two had no lamps on them.

Call them chimneys which a man had to build, and tell me that he has built two.

Call them slate pencils, two of which got broken.

Call them curtain sticks, two of which were used for curtains.

Johnny made five *i*'s on his slate; two had straight lines, the rest did not. How many did not?

George had five apples, and gave two of them to his little brother. How many apples had he left?

There are five school days in a week. If it is so stormy that Annie is absent two days, how many days does she come?

A geranium blossom has five petals. If two petals fall off, how many remain on the blossom?

A pansy blossom has five petals. If two are black and the rest bright, how many petals are bright?

A lady had a calla lily with five blossoms on it. She cut off two of the blossoms. How many remained on the lily?

A man had five horses; two were always used in a span. How many beside the span did he have?

There were five peas in a pod. When the pod was opened, one flew up in the air and one fell on the floor; the rest went into the pan. How many went into the pan?

Five little girls were running in a line. One got snapped off, and another fell down. How many were left in the line?

Five boys were playing fox and geese. One boy was the fox, and one goose got caught before he could hide. How many geese remained to be caught?

Who has a story to tell me for five minus two?

**Five minus Three.**

- How many dots do I show you on the board? (Five.)  
You may rub out three dots. How many dots are left?  
Five dots minus three dots are how many dots?

Here are five lines; you may cross out three lines. How many lines are not crossed?

There are five erasers at that board; you may bring three of them to this board. How many remain at that board?

Five children may stand in a row; three may walk off. How many are left in the row?

Show me five fingers on one hand; shut down three. How many remain open?

Here is a step-ladder with five steps. When I have mounted three steps, how many more steps will there be to mount?

Here are five pencils; distribute three of them to the children. How many have you left?

Each take five blocks; put three of them behind you. How many remain on the table?

Tell me a story for that.

Tell me a story for five feet of snow, three feet of which melted away.

You are in school five hours a day. If three are in the morning, how many are in the afternoon?

If you have five lines of *n*'s to make, and have made three, how many more lines of *n*'s must you make?

If you have five words to write, and write three, how many more words have you to write?

If you have five cents, and buy a book for one cent, two pencils for a cent, and ten sheets of paper for a cent, how many cents have you left?

If I buy a three-cent postage stamp, and give five cents in payment, how much change ought I to receive?

I have a pail which holds five pints of milk; there are three pints of milk in it. How much more will it hold?

Here are five marks on the board, which you may call boys. One boy turned down Depot Street, another went up Pleasant Street, and one went into the post office; the rest walked along together. How many walked along together?

### Exercise for Review.

How many sides has this triangle?

How many corners has this triangle?

How many sides has this square?

How many sides has this blackboard?

How many corners has this blackboard?

Make a square with blocks, putting one block on a side. How many blocks does it take?

Put a bean in each corner of this square. How many beans does it take?

Make a triangle, putting a block on each side. How many blocks does it take?

Put a button in each corner of the triangle. How many buttons does it take?

How many corners has this table?

How many sides has this table?

How many legs has a piano?

How many stands has a piano-stool?

If there are four piano-stools, how many stands are there?

There are two ends to your desk, and a front side, a back side, and a top. How many parts to your desk?

Who will show me five things?

Who will show me four things?

Who will show me three things?



Read what I show you. (Teacher shows child any operation in Addition or Subtraction that he has seen. Pupil reads as teacher makes the changes.)

Show me that three spools and two spools are five spools; that two spools and three spools are five spools; that four spools and one spool are five spools; that one spool and four spools are five spools.

One minus one is how many?

Two minus one are how many?

Three minus one are how many?

Four minus one are how many?

Five minus one are how many?

Two minus two are how many?

Three minus two are how many?

Four minus two are how many?

Five minus two are how many?

### Five minus Five.

How many blocks have I? (Five.)

Tell me how many I have taken away. (Teacher puts five under the table.)

How many have I left?

You may show me that, and tell me about it.

Some one else show me that five minus five leaves none.


You may each call your blocks fruit, and tell me about five minus five. Call them animals. Call them dishes. Call them chairs.

Here are five kittens; five are asleep. How many are awake?


There were five horse-cars in the street; five were moving. How many were still?

If I have five pencils in my box, and take out five, how many are left?

**Exercise for Review.**

Arrange your blocks on the table just as I arrange these dots on the board. 


One dot at each corner and one dot in the middle make how many dots?

Like this.  How many have you?

Like this.  Like this. 

One dot in the upper row and three dots in the lower row make how many dots?

Three dots in the upper row and two dots in the lower row make how many dots?

Like this.  How many did I make this time?

If you have two weeks' vacation in the fall, and three in the winter, how many weeks' vacation does that make? If you visit three weeks, how many weeks do you stay at home?

A knife, a string, a bit of crayon, a cent, and a nail were found in Ned's pocket. How many things? He gave the crayon to me, spent his cent, drove his nail into a board, and lost his knife. How many things remained?

**Five divided by One.**

Here are five dolls; give one to each little girl. To how many little girls can you give them?

Here are five cents; put each in a box by itself. How many boxes does it take?

Here are five crayons; put each at a board by itself. How many boards does it take?

Here are five paper rings; put each on a finger by itself. How many fingers does it take for the five rings?

Here are five cards; put each in an envelope by itself. How many envelopes will it take?

If a housekeeper had five eggs, and used one a day, how many days would the five eggs last her?

If a family used a pound of butter a day on the table, in how many days would they use five pounds?

Jamie has five cents; he earned a cent a day. How many days did it take him to earn the five cents?

### Five Ones.

Show me five blocks, with a button on each block. How many buttons are there?

Show me five boxes, with a shell in each box. How many shells do you show me?

Here are five boys; each may take one block. How many blocks have the boys together?

Show me five tin plates, with a paper cent in each plate. How many cents have you shown me?

Show me a cup in each plate. How many cups?

Five boys have each a slate. How many slates do they all have together?

If each of the five slates has a sponge fastened to it, how many sponges have all the slates?

If each of the five slates has a pencil on it, how many pencils have all the slates?

If each pencil cost a cent, how many cents did the five pencils cost?

If five books cost each a cent, how many cents do the books cost?

Five boys bought each a sled. How many sleds did all buy together?

I have five little nephews, to whom I give a Christmas present apiece. How many presents must I buy?

If each hangs up his stocking Christmas Eve, how many stockings will be hung up?



**Exercise for Review.**

Put on the board marks for what I show you. (Teacher shows different combinations of numbers. Child shows the same combination with marks on the board. Teacher shows a number and subtracts from it. Child shows the number on the board and crosses out the number subtracted.)

Read what you have shown me on the board.

Illustrate, with marks on the board, the stories I tell you:

Three men were raking hay; two more men went to rake hay with them.

Three hens roosted in a tree, and two on a fence.

I have three plants, with a blossom on each plant.

I have three baskets, with two handles on one, and one handle on each of the others.

I have three cents in one hand, and one cent in the other hand.

James put five eggs in his pocket, and two broke.

There were five Christmas trees in a ring, and a beautiful light on the top of each tree.

I can see five houses, with a chimney on each house.

I have at home a cat, two kittens, a dog, and a bird.

Three boats are going up river, with a man in each boat.

Four frogs are croaking in a pond.

Ed has two rabbits, two squirrels, and a parrot.

Take this paper money. Johnny may be the salesman. The others may be his customers and buy these things that are on the table.

Nettie may be the first customer.

"How do you sell your apples?"

"I sell them at two cents apiece."

"I will take two." (Nettie passes a five-cent piece in payment.)

"Two apples at two cents apiece, four cents, and one cent are five cents."

Maggie may be the second customer.

"I wish for a spool of white thread."

"What number do you wish?"

"Number 60."

"It is four cents."

(Maggie passes a five-cent piece in payment.)

"One spool of thread, four cents, and one cent are five cents."

Mary may buy this time.

"I wish for five of these pictures."

"These pictures are a cent each."

(Mary counts out her five cents and passes it to the shop-keeper.)

Mabel may buy.

"I will take three one-cent pencils." (She gives two two-cent pieces in payment.)

"Three pencils at a cent apiece, three cents, and one cent are four cents."

## § 12. COMPARISON OF FIVE WITH NUMBERS KNOWN.

Show me one block.

○

Show me two blocks beneath this.

○ ○

Show me three blocks beneath these.

○ ○ ○

Show me four blocks beneath these.

○ ○ ○ ○

Show me five blocks beneath these.

○ ○ ○ ○ ○

Which is the smallest number?

Which is the largest number?

Which is one more than one?

Which is one less than five?

Which is one more than two?

Which is one less than four?

Which is one more than three?

Which is one less than three?

Which is one more than four?

Which is one less than two?

Five is how many more than four?

Five is how many more than three?

Five is how many more than two?

Five is how many more than one?

Five is how many more than none?

Four and how many are five?

Three and how many are five?

Two and how many are five?

One and how many are five?

Five minus one are how many?

Five minus two are how many?

Five minus three are how many?

Five minus four are how many?

Five minus five are how many?

Jamie has five buttons on his jacket, and Harry has four.

Which has more? How many more?

I have two two-cent pieces, and a five-cent piece. Which is worth the more? How much more?

Nellie has copied her words twice, and she has to copy them five times. How many more times must she copy them?

I have five letters to answer. If I answer three, how many more have I to answer?

Jennie has five handkerchiefs to hem. If she hems four, how many more has she to hem?

Harry has a five-cent piece; Tom has a one-cent piece and a two-cent piece. How much more money has Harry than Tom?

Copy:

•	• •	• • •	• • • •	• • • • •
one.	two.	three.	four.	five.

## § 13. ONE-HALF.

What have I? (An apple.)

I will give you part of my apple. I will give Mamie the other part.

Look at the two pieces into which I cut the apple. Which is the larger piece? (The answer, "They are just the same," is usually given. Give the word "equal" for "just the same.")

What have I now? (A card.)

I will give Ned a part of this card. I will give Annie the other part.

Look at the two pieces into which I have cut the card. Which is the larger piece? (They are equal.)

You may cut this apple into two equal pieces.

You may cut this paper ring into two equal pieces.

You may cut these paper scissors into two equal pieces.

You may divide this envelope into two equal pieces.

You may divide this square into two equal pieces.

Show me the two pieces into which you cut the apple.

What part of the apple is each piece?

Each of the pieces is one-half of the apple.

Show me one-half of the apple.

Show me the other half of the apple.

Show me the two pieces into which you cut the paper ring. Which is the larger piece?

Show me one-half of the ring.

Show me the other half of the ring.

Into how many pieces did you cut the paper scissors? Are the pieces equal?

Show me one of the two equal pieces. Can you tell me what part of the scissors it is? Show me the other half of the scissors.

Show me one-half of the envelope.

Show me one-half of the square.

Ned, you may give Susie half of this apple, and keep the other half yourself.

Look at the two halves of the apple. Which is the larger?

I will divide this apple into halves. Into how many parts do I divide it?

What part of the apple is this? (Holding up one half.)

What part of the apple is this? (Holding up the other half.)

Show me half of an apple.

Show me another half of an apple.

Show me half of this sheet of paper; half of this ring; half of this circle; half of this string.

Draw a line so as to divide your slate into two equal parts. What part of your slate is one part? is the other part? is each part?

Here is a square on the board. Draw a line so as to divide it into two equal parts. What part of the square is each part?

Show me what you think to be half of this stick; half of this block; half of this pencil; half of this table; half of this line; half of the window; half of this blind; half of this radiator.

Here are two blocks. Put them into two groups, and have just as many in one group as in the other. How many in each group? (One.)

One block is one-half of two blocks.

Show me one-half of two blocks.

One-half of these two sticks is how many sticks?

One-half of these two buttons is how many buttons?

One-half of these two pencils is how many pencils?

Cyrus had two cents. He gave half of what he had to me. How many cents did he give me?

Here are four blocks. Put them into two equal groups.  
How many in each group?

Two is one-half of four.

Show me one-half of four blocks. How many blocks in one-half of four blocks?

Show me one-half of four buttons. How many buttons?

Show me one-half of four sticks. How many sticks?

If I have four apples, and give you half of what I have, how many shall I give you?

If I give you half of my four cards, how many cards shall I give you?

If I have four weeks' vacation, and spend half of it here, how many weeks shall I stay here?

If I spend the other half of it at home, how many weeks shall I spend at home?

Take two blocks, and separate them into two equal parts. How many in each part?

Take four blocks, and separate them into two equal parts. How many in each part? What part of four blocks are two blocks?

This is one-half an apple. How many such parts make a whole apple?

Here is half a sheet of paper. How many such pieces of paper make a whole sheet of paper?

Here is a half-pound weight. How many such weights make a pound?

Baby drinks a half-pint of milk every morning. How many mornings will it take to drink a pint?

A pint is half of a quart. How many pints does it take to make a quart?

How many halves of an apple make a whole apple?

How many halves of an orange make a whole orange?

How many halves of an hour make a whole hour?

How many halves of a pencil make a whole pencil?

## CHAPTER V.

### THE NUMBER SIX.

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#### § 14. SIX AS A WHOLE.

Show me five blocks. Show me one more block. You have shown me six blocks.

Show me six fingers; six children; six marks on the board; six desks; six rounds on the settee.

Find a card with six dots on it.

Find six cents; six buttons; six bits of crayon.

Make a pen and put six pigs in it.

Here is a hen on the board. She has six chickens. Make dots on the board for the chickens.

Here is a block of houses. It has six chimneys. Make a straight line for each chimney.

Where have you seen six things?

Name six things you have seen at home, and take a block for each thing.

Name six things you have seen in the shop window; on the street.

Name six days in the week; six months in the year.

Who is six years old?

Two boys may stand here, back to back. Each walk straight ahead over three boards. How many boards apart are you?

Stand in the same way again. Each boy pass three desks and stop. How many desks are between you?

Copy the word **six**.

## § 15. DISCOVERIES IN SIX.

Look at your six blocks.

Who can find out something about six?

What has Jennie found? (Two threes in six.)

Bennie? (Three twos in six.)

Ned? (Five and one are six.)

Harry? (Three taken from six leave three.)

Mary? (Six taken from six leave none.)

Four and how many are six?

Two and how many are six?

One and how many are six?

Let me see what you can take away when you have six things.

Call them geese, and let a fox catch some of them.

Johnny, how many has he caught of yours? How many have you left?

How many has he caught of yours, Mary, and how many have you left? Ned? Bennie? Jennie?

Who can tell me a story about six? another?

**Exercise for Review.**

If a boy stands at each door in this room, how many boys will you see standing at doors?

If I tell John to lower half the windows in this room, how many windows will he lower?

If I have three pencils and break one, then buy two and give one away, then lose one, how many shall I have?

If I take three steps forward, and then come back two steps, then go on three steps, how many steps away am I from where I started?

If you get three Christmas cards in the mail, and two in your stocking, how many cards will you receive in all?



If I buy a dozen Christmas cards at one store, and two dozen at another store, how many dozen do I buy in all?

If it takes a two-cent stamp to send one Christmas card, how many stamps will it require to send two such cards? How many cents will it cost to buy the two stamps?

If you have two holidays in the fall term, and two in the spring term, how many holidays will you have in both terms?

Show me a half of six; a half of four; a half of two; a half of this square; a half of this rectangle; a half of this piece of twine; a half of your forefinger; a half of your arm; a half of your face; a half of this table.

If you separate these four blocks into two *equal* groups, how many blocks will there be in each group?

What part of four blocks are these two blocks?

What part of four pencils are these two pencils?

What part of four cups are these two cups?

If you must put away your boots, hang up your cap, and brush your hair before supper, how many things have you to do?

A milkman had to go a mile and a half to the pasture to milk his cows, and back again, in the morning. How many miles did he have to go in all?

A man has a garden to dig, which will take him four days; but he hires a man to help him. How many days will it take both together to dig the garden?

How many rows of teeth have you? How many fingers on one hand?

Tell me a story about four minus three; five minus three; three minus three; three and two; two and two; five minus four.

Who can tell how many blocks I show you? how many now? how many now? how many now? Show me four blocks; five blocks; three blocks.

## § 16. FACTS IN SIX.

**Five and One.**

Take five blocks. Take one more block. How many blocks are five blocks and one more block?

Ella may take five pink shells. She may put one more shell with them. Who knows how many shells Ella has?

Peter may take five pictures. He may take one more picture. Who knows how many pictures Peter has?

Annie may pick out five red stars and one blue star. How many stars has Annie?

Find five things of one color and one of another color, and tell me how many you have.

If I find five raisins in one piece of cake, and one in another, how many do I find in all?

If I give you a five-cent piece, and a one-cent piece, how many cents do I give you?

If you write a word on your slate five times, and then write it once more, how many times do you write it?

Tell me a story about five articles and one article; another; another.

**One and Five.**

Alice may show me one pail. John may show me five more pails. How many pails do both show me?

Jamie may give one blue stick to Jennie, and five red sticks to Nellie. Who will tell me how many sticks both have?

Make one mark on the board with this yellow crayon, and five marks with this blue crayon. How many marks have you made?

Make one large dot on the board with this green crayon, and five dots with the red crayon. How many dots have you made?

Show me one spool; put five with it; how many now?

Show me one top; put five with it; how many now?

Show me one paper shovel ; put five paper shovels with it ; how many paper shovels are there now ?

Show me one paper hat ; put five paper hats with it ; how many paper hats are there now ?

If there is one girl standing to read, and five more stand with her, how many are standing ?

If Annie uses one sheet of paper in the morning, and five in the afternoon, to write her story, how many sheets of paper does she use ?

If you put one plate on the table, and mamma puts on five more, how many plates are put on the table ?

If Nellie has five little girls to visit her on her birthday, how many little girls are there in all ?

If Johnnie has one cent, and earns five more, how many cents does he earn in all ?

If there is one cruet in the caster, and you put in the other five, how many cruets in the caster ?

Tell me a story about one and five ; another ; another ; another.

### Exercise for Review.

If I have five letters to write, and write one a day, how many days will it take me to write them ?

If Annie puts her two hands under the table, and Jamie puts his hands under the table, how many hands will there be under the table ?

If Ned stands squarely on two feet, and Harry stands squarely on two feet, how many feet will rest nicely on the floor ?

If there are three in your family, and you expect two more to tea, how many will there be to tea ?

How many cups and saucers will it take for all ? how many plates ? how many knives and forks ?

If you set the chairs, how many chairs will you place ?

If there are four persons in your family, and one goes away to visit, then two come to visit you, and one of these goes away, how many will there be in the family?

If you have two errands to do at the grocer's, and one at the jeweller's, and one at the post office, how many errands have you to do in all? If you forget three of your errands, how many do you remember?

If you have four errands to do, and forget half of them, how many do you remember?

If you have four miles to go, and go two miles, what part of your journey have you made?

### Six minus One.

Show me six blocks. We will call them ducks in a pond. Mrs. Bond went down to the pond and caught one; how many were left?

Call them boats sailing by; one takes in sail; how many go sailing on?

We will call them frogs; one has jumped into the pond; how many are left?

Call them snails creeping into their shells; one has crept in; how many are still creeping in?

Call them mice in a box; one has jumped out; how many remain in the box?

If you have six cents, and buy a stick of candy for one cent, how many cents have you left?

If there are six cakes in the jar, and you eat one, how many cakes remain in the jar?

If Annie has six stories to write, and writes one, how many more has she to write?

If there are six cows, and one jumps over the moon, how many are left?

If you have six dolls, and break one, how many are left?

If you have six torpedoes, and snap one, how many have you left?

If you have written six words, and one is wrong, so it has to be rubbed out, how many will remain?

If there are six roses on a bush, and one drops off, how many are left?

### Six minus Five.

Here are six scholars in a class; five are girls; how many are boys?

There are six weekdays in the week; you go to school five days; how many days do you have to play at home?

There were six monkeys in a tree; five were small, and the rest large; how many large monkeys in the tree?

If there are six steps to go up, and you go up five, how many more are there to go up?

If Mary's doll has six dresses, and she puts away five, how many does she leave out?

If there are six stars around the moon, and a cloud covers five, how many can you see?

If you have six pins, and I take five, how many do you have?

Six apples are in a dish; five are good; how many bad?

### Exercise for Review.

You may tell me a story about six minus one; five minus one; four minus one; three minus one; two minus one.

You may tell me a story about five minus two; four minus two; three minus two; two minus two.

Give me an example for what I show you. (Teacher shows different combinations and separations of numbers with the blocks, and pupil makes an example, illustrating what he sees.)

If you drop six kernels of corn into each hill, and a worm eats one, a crow eats two, and one dies, how many are left to grow?

Show me six blocks; six fingers; six marks on the board; six paper baskets; six birds.

Tell me what number I show you; now; now.

If you have six presents Christmas, and give one to your brother, how many presents have you then?

If mamma then makes you another present, how many will you have?

I have one bird's-nest in my room, and my sister has five; how many have we together?

One swallow built his nest on a beam in our barn, and five more built nests under the eaves; how many swallows' nests were there in all?

Baby is one year old to-day; how old will he be in five more years?

Nellie bought six pencils this morning, but has already broken one; how many whole ones has she?

When she has broken two more, how many will she have?

### Four and Two.

Show me six blocks.

Show me four of them; show me two more. How many blocks are four blocks and two blocks? How many sleds are four sleds and two sleds? How many knives are four knives and two knives? How many flies are four flies and two flies? How many bees are four bees and two bees? How many ants are four ants and two ants?

Tell me a story about four handkerchiefs and two handkerchiefs; four sparrows and two sparrows; four cows and two horses; four hammers and two gimlets; four rakes and two pitchforks; four chairs and two tables; four books and two pencils; four maps and two pictures.

**Two and Four.**

Show me two blocks; now show me four more; how many blocks in all?

Show me two beads; show me four more; how many beads in all?

If there are two wheels on one carriage, and four on another, how many wheels altogether?

If a whistle costs two cents, and a top four cents, how many cents do both cost?

If your boots cost two dollars, and mine cost four dollars, how many dollars do both cost?

If a pencil cost two cents, and some paper four cents, how many cents do both cost?

It is two miles to church, and four miles more to the depot; how many miles is it to the depot?

**Exercise for Review.**

If you have six cents, and spend five, how many cents have you?

If you must write your words six times, and have written them five times, how many more times must you write them?

If there are six ponds in the park, and all but one have lilies in them, how many have lilies in them?

If there are six boys coasting on the hill, and all but one come in, how many come in?

If four boys are skating on the pond, and two more join them, how many are then skating on the pond?

You can sing four songs; if you learn to sing two more, how many can you then sing?

It is two miles to church; if I walk to church and back, how many miles do I walk?

How many miles is it half way to church?

If I walk half way to church, then ride the rest of the way, but walk home, how many miles shall I walk?

Show me one-half of four blocks; one-half of two blocks; one-half of six blocks.

Your slate has four sides; if the frame is gone from half the sides, from how many sides is it gone?

There are four boys in the D class; one-half of the class was absent yesterday; how many were absent?

I can pick a pint of berries in half an hour; how many pints can I pick in an hour?

One mile is half the distance I walk every pleasant day; how many miles do I walk?

What time does the minute-hand take to go round the face of the clock? What time does the hour-hand take to go half-way round the face of the clock? What part of the face of the clock does the minute-hand go round in half an hour? What part of the face of the clock does the hour-hand go round in six hours?

There are two rounds on one side of a chair, two on another side, one in front, and one behind; how many rounds on the chair?

How many sides has this room? If you count the ceiling and the floor, how many sides has it?

### **Six minus Two.**

Show me six fingers; shut two fingers; how many fingers are open?

Show me six blocks minus two blocks. Tell me a story about six blocks minus two blocks; six horses minus two horses; six beans minus two beans; six cushions minus two cushions; six dolls minus two dolls; six books minus two books; six lamps minus two lamps; six candles minus two



candles; six postal cards minus two postal cards; six envelopes minus two envelopes; six sheets of paper minus two sheets of paper; six pints of molasses minus two pints of molasses; six plates minus two plates; six sticks minus two sticks; six umbrellas minus two umbrellas; six Christmas trees minus two Christmas trees; six presents minus two presents; six pop-guns minus two pop-guns.

### Six minus Four.

Make six straight lines on the board; cross out four of them; how many are not crossed out?

Show me six o's on the board; cross out four; how many are not crossed out?

Show me six crosses on the board; cross out four of them; how many are not crossed out?

Show me six slanting lines; cross out four; how many are uncrossed?

Show me six dots; draw a line through four of them; how many have no line drawn through them?

Show me six blocks, and tell me how many blocks six blocks minus four blocks are.

Tell me another story about six minus four; another; another.

### Exercise for Review.

How many eyes and ears have you? how many hands and feet?

If you must pick up your mittens and your boots, how many things must you pick up? If then you see your hat and coat lying on the chair, and pick them up, how many things do these make that you had to pick up?

If there is a bed, and two chairs, and a table, and chest of drawers in your room, how many articles of furniture in

your room? If then you have a bookcase put up, how many pieces of furniture will there be?

If there are four books on your bookcase, and two on the table, how many books are there?

If Johnny pays two cents for a pencil, and three cents for a sponge, how many cents does he pay?

If I buy two Christmas cards at two cents apiece, and another for two cents, how many cents will all three cost?

There are six parts to Harry's puzzle; he cannot find two parts; how many parts can he find?

How many legs have you and your dog together?

How many feet have you and your cat together?

How many feet and ears has your dog?

How many blinds do you see on two windows?

How many mittens make two pairs of mittens and a half a pair?

How many boots make two and a half pairs of boots?

If it takes half a minute to write half of your words, how long will it take to write the whole?

If I receive two express packages, send one back, then receive two more, how many do I keep?

If I can paint one plaque in two hours, how long will it take me to paint two such plaques?

Two cards and four cards are how many cards?

Three books and two books are how many books?

### § 17. THE INCH.

(Provide some stiff squares, an inch on each side.)

You may each take one of these squares.

Show me one side of your square. Who knows how long it is?

Ned says it is an inch long. *It is an inch long.*

Draw on the board a line an inch long; measure it by a side of your square so as to be sure it is an inch long.

Draw another line an inch long.

Draw an up-and-down line an inch long.

Draw a right-and-left line an inch long.

Draw a slanting line an inch long.

Here are some strips of paper marked off into squares. Find how long it is between any two marks. (An inch.)

See if it is an inch between the joints on your fingers; between the joints on your hand.

Measure this side of this block. Is it an inch long?

This side of the block. Is it an inch?

Measure this side of this card.

Measure this side of this envelope.

Measure this side of this postage-stamp; this side of this little book; an edge of this rubber; of this little box.

Measure this knife-handle; the blade; this pencil; a side of this square I draw on the board.

You may draw a line two inches long; three inches long; four inches long; five inches long.

You may guess how long this line is that I draw; this line; this line.

If it takes two inches of edging to go round one sleeve of dolly's dress, how many inches will it take to trim the two sleeves? If it takes two more inches to trim the neck, how many inches will it take in all?

### Six divided by Two.

You may divide your six blocks as I divide mine.



How many in each group? How many groups of two each?

Take six paper cents, and see if you can find three twos in six. Take six sticks; take six circles; take six cards.

If you had six apples, and should put two on a plate, how many plates would you need?

If you had six cents, how many two-cent stamps could you buy? How many two-cent pencils? How many two-cent books? How many two-cent spools of thread?

If I have six boots, how many pairs have I?

If there are six horses on a stage-coach, how many spans of horses are there?

If a man has six oxen, how many yokes of oxen has he?

It takes two horses for every hack; how many hacks will six horses supply?

If you owe me six cents, and pay me in two-cent pieces, how many pieces will you give me?

If I have six half sticks of candy, how many whole sticks of candy have I?

I have six screws which I am going to put into picture-frames. I shall put two in each frame. How many frames are there?

It takes two tassels for every curtain. If I have six tassels, how many curtains can I furnish with tassels?

### Three Twos.

Show me two blocks together; two more together; two more together. How many twos? How many blocks in all?

Show me two buttons; another two buttons; another two buttons. How many buttons in all?

Show me three boxes; put two cents in each box. How many cents in all?

Show me three tin plates; put two pieces of paper in each plate. How many pieces of paper in all?

If you have three pockets, and two apples in each pocket, how many apples will you have?

If you buy three pencils, and pay two cents for each pencil, how many cents must you pay?

If there are three little boys looking straight at me, how many eyes will be looking at me?

If three little boys have their hands under the table, how many hands are under the table?

How many mittens will it take for three girls?

How many wristers for James, John, and Willie?

How many skates for three boys?

If Mary writes two stories each day, for three days, how many stories will she write?

If Harry finds three hen's nests, with two fresh eggs in each nest, how many eggs does he find?

Each sheet of paper has two leaves, how many leaves have three sheets?

If each ink-stand has two wells for ink, how many wells will three such ink-stands have?

If a bottle of ink will fill two of the ink-stand wells, how many wells will three bottles fill?

### Three and Three.

Each choose three things of the same kind. Choose three more like them. Who will tell me how many he has?

Who has a story for what he has shown me?

Find three squares on this chart. Find three more squares. How many squares have you found all together?

Find three stars and three stars; three rings and three rings.

Three spools and three spools are how many spools?

Three marks on the board and three marks on the board are how many marks?

Three apples and three apples are how many apples?

Three chairs and three chairs are how many chairs?

Three marbles and three marbles are how many marbles?

Tell me a story about three and three; another; another.

**Exercise for Review.**

Show me six blocks; six buttons; six shells; six fingers; six inch-measures.

Show me five fingers; five bits of crayon; five pieces of paper.

How many must you take away from six blocks to have four remain? to have three remain? to have two remain?

Tell me a story about six minus four; six minus two; six minus five.

Name six books you have seen.

Name six towns of which you have heard.

Name six games that you can play.

Give six stories that you can write.

Give six words that you can spell.

Name six animals that you know.

How many mittens in three pairs of mittens?

How many horses in three spans of horses?

How many oxen in three yokes of oxen?

Which will buy more peanuts, six cents or three two-cent pieces?

Which cost the more, six one-cent pencils or three two-cent pencils?

I can see three flies and two bees; how many insects can I see?

If a spider catches two flies in his web to-day and four to-morrow, how many flies will he catch altogether?

You may divide this apple into two equal parts. What part of the whole number is each part?

Divide this string into two equal parts. What part of the whole string is each part? How many halves in the whole string?

This stick is two inches long. How long is half the stick?

**Six minus Three.**

How many blocks have I? (Six.)

How many will you take, then?

I will give you three of my blocks; how many have I left?

Nellie, you may give Harry three of your blocks; how many have you left?

Jennie, you may give me three of your six blocks; how many have you left?

Tell me a story about six chickens minus three chickens; six sheets of paper minus three sheets of paper; six books minus three books; six plates minus three plates; six spoons minus three spoons; six bonnets minus three bonnets; six dollars minus three dollars; six umbrellas minus three umbrellas; six baskets minus three baskets; six marbles minus three marbles; six watches minus three watches.

**Six divided by Three.**

Show me six blocks. Divide your blocks as I divide mine.



How many here? here? How many threes?

Take six blocks of another kind. See if you can find how many three-blocks in six blocks. How many do you find?

Take six crayons and put three on a board. How many boards can you put them on?

Here are six cows. Put three in a pen. How many pens does it take?

If I have six cents, how many three-cent postage-stamps can I buy? how many three-cent books? how many three-cent pencils? how many three-cent rubbers?

If I have six books, and put three on a shelf, how many shelves will it take?

If there are six sticks of wood in the box, and you put three in the stove at once, how many times can you put three in the stove before they are gone?

If there are six little girls, and three walk in each row, how many rows of girls?

### Exercise for Review.

If two boats start at the same place, and one rows up the river three miles, and the other rows down the river three miles, how far apart are the two boats?

If a spider in spinning his web spins a thread three inches in one direction and three inches in the opposite direction, how far across is the web?

If two men are six miles apart, and walk towards each other three miles, how far apart are they then?

Here are six pencils; two of them are too short to use, and three others are too blunt to write well. How many are in a good condition?

I have two hens, a duck, and a goose; how many fowls have I?

Ned has three tame rats, two rabbits, and a young fox; how many pets has he?

If there are six hoods on the chair, and Annie hangs up three of them, how many are left on the chair?

If you must bring in four baskets of wood, and have already brought in two, how many more must you bring in?

If you must pick up your doll, put away your blocks, sweep the room, and set the chairs in order, how many things must you do?

In one nest there are four eggs, and in another two eggs. If I leave the nest-egg only in each nest, how many eggs shall I take away?



**Two Threes.**

Show me three blocks.

Show me another three blocks.

How many threes? Your two three-blocks are how many blocks?

Take three spools and another three spools. How many threes? How many spools in all?

Show me three blocks in each of your two hands. How many threes do you show me? How many blocks?

I have three buttons on each pocket. How many buttons have I on my two pockets?

There are three dots on each of these two cards. How many dots in all?

If a sponge costs three cents, how many cents will two sponges cost?

If Ellen writes three i's on each line, how many will she write on two lines?

If there are three rings on each finger, how many rings on two fingers?

**Exercise for Review.**

Point in four directions; point in two more directions. In how many directions have you pointed?

Put a block on each corner of the table. How many blocks does it take?

Take two shells in each hand. How many shells have you?

Every chair has a seat, four legs, and a back. How many parts has every chair?

If Jamie has six marbles, and loses two, then buys two more, how many marbles has he?

If Nellie writes four words, erases three words, then writes three more words, how many words has she on her slate?

If Mabel has some pennies, and spends four, then earns four, how many more pennies has she than at first?

If I have five dollars, and spend three, then receive four, how many more have I than at first?

You may arrange six dots on the board in all the ways you can.

You may arrange six lines on the board in all the ways you can.

Read what I show you ; read again ; read again.

Make up a story from what I show you with the blocks.

Make up a story from what I show you on the board.

You may tell me any story you know about six, and I will illustrate it on the board. Tell me another ; another.

\* I will give you an example, and you may illustrate on the board what I tell you.

Ned has illustrated five examples, and Mamie three. How many more has Ned illustrated than Mamie?

### Six minus Six.

If I have six cents, and buy a six-cent loaf of bread, how many cents have I left? Show me with your blocks.

If there are six rolls on the plate, and if six of us take each a roll, how many rolls are left?

I will give you these six cents. You may buy me six one-cent stamps ; how many cents have you left?

If a lady has six peppermints, and she gives to each of six little girls one peppermint, how many will she have left?

Six oranges minus six oranges are how many oranges?

Six spiders minus six spiders are how many spiders?

Six elephants minus six elephants are how many elephants?

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\* If the teacher is judicious in her examples, and encouraging in regard to the illustrations, this is one of the most profitable exercises in Arithmetic.

**Exercise for Review.**

If I have no money, and no one gives me any money, how much money shall I have?

If James has no words on his slate, and writes no words on his slate, how many words will there be on his slate?

If there are no blocks on the table, how many blocks can you take from the table?

If there are no apples in the dish, how many apples can you take from the dish?

If there are no hats or coats lying around, how many hats and coats will there be to pick up?

If there are no oranges in town, how many oranges can I buy in town?

If there are no mistakes on your slate, how many mistakes will you have to correct?

If no May-flowers have blossomed, how many May-flowers can you find?

If there are no books on the desk, and I put four books on the desk, how many books will there be on the desk?

If there is no milk in the pan, and I put three pints of milk in the pan, how much milk will there be in the pan?

If three little girls have each two pencils, how many pencils have they together?

If each girl has one pencil, how many pencils have they?

If each girl has no pencil, how many pencils have they?

If each of four boys had no cents, how many cents would all have?

If one velocipede has three wheels, how many wheels have two velocipedes?

How many chairs in two chambers, if there are three in each chamber?

**Six divided by One.**

Take six buttons; put each on a plate by itself. How many plates does it take?

Here are six cups; put each in a saucer by itself. How many saucers does it take?

Here are six spoons; put each in a saucer. How many saucers are required for the six spoons, with each one in a saucer by itself?

Here are six cents; give one cent to each little girl until they are all given away. To how many little girls can you give them?

I have six curtains. I shall put one at a window. How many windows will they supply?

There are six horses in a stable; each is in a stall by itself. How many stalls do they take?

I have written six stories. If now I draw a picture to illustrate each story, how many pictures must I draw?

**Exercise for Review.**

Draw a line on the board one inch long.

Draw another line, two inches in length.

What part of the last line is the first?

Draw a line twice as long as the last line.

What part of the last line is the two-inch line?

Draw a line three inches long.

Draw another line twice as long.

What part of the last line is the three-inch line?

Show me a line four inches long.

Show me a line half as long as the four-inch line.

Show me the line that is six inches long.

Point to a line half as long.

The one-inch line is half as long as what other line on the board?

The three-inch line is equal to one-half of what line?

**Six Ones.**

Take six blocks. Put them as I put mine. (Teacher separates hers into ones.)

How many ones have you?

How many blocks altogether?

Show me six shells, with a pebble in each shell; how many pebbles do you show me?

Show me six cards, with a dot on each card; how many dots?

If there are six wagons front of the market, and a driver in each wagon, how many drivers are there?

If Amy learns a word each day for six days, how many words will she have learned?

If six of us have each an orange, how many oranges have we together?

If six boys have each a sled, and put them together in line, how many sleds will be in line?

If six little girls agree each to make an apron for the fair, how many aprons will they make for the fair?

If six little girls agree each to dress a doll, how many dolls will they dress?

If I write my name on each of six visiting cards, how many times must I write my name?

Who will tell me a story about six ones?

**Six divided by Six.**

I have six apples. I wish to give six apples to as many little boys as I can. Who will tell me to how many little boys I can give them, giving six apples to each?

If you have six cents, how many tops at six cents each can you buy? How many cards at six cents each? How many toy balloons at six cents each?

A car ticket costs six cents; how many car tickets can you buy if you have only six cents?

**Exercise for Review.**

You may divide this square into two equal parts; this circle; this triangle; this string; this splint; this line.

Draw a line dividing this blackboard into two equal parts.

Divide four blocks into two equal parts; into four equal parts.

Divide five blocks into five equal parts.

Divide three blocks into three equal parts.

Divide six blocks into six equal parts; into three equal parts; into two equal parts.

If car tickets are three cents apiece, how many can you buy for six cents?

How many postage-stamps at three cents each can you buy for six cents?

How many days will it take for you to earn six cents, if you earn three cents a day?

If Mary hems three handkerchiefs in a week, how many weeks will it take her to hem six handkerchiefs?

If she hems only two a week how many weeks will it take her to hem six?

If Ellen writes two words a minute, how many minutes will it take her to write six words?

A pint of milk costs two cents, how many pints will six cents buy?

It requires two boys to steer a sled; how many sleds can six boys manage?

If it required only one boy to steer each sled, how many could six boys manage?

How many one-cent stamps will six cents buy?

How many one-cent rolls will six cents buy?

If Nellie learns one stanza a day, how many days will it take her to learn six stanzas?

If I have six cups to paint, and I paint one a day, how many days will it take me to paint the six cups?

How many six-cent cards can I buy for six cents?

How many three-cent cards?

How many two-cent cards?

How many one-cent cards?

How many five-cent cards? and how many cents will remain?

How many four-cent cards? and how many cents will remain?

### Halves of Six.

Show me six splints. Give me half of them. How many do you give me?

I have six cents. If I spend half of what I have, how many cents do I spend? How many cents have I left? What part of six cents are three cents?

Mary has six sheets of paper; Annie has only half as many sheets; how many sheets of paper has Annie?

The cook uses six eggs to make a pudding, and half as many to make a loaf of cake; how many eggs does she use for cake?

Nellie is in school six hours a day; her little sister is in school only half as many hours; how many hours is her sister in school?

I work six days in the week; my sister works half as many days; how many days does she work?

### Exercise for Review.

Show me one-half of six blocks.

How many blocks are one-half of six blocks?

How many apples are one-half of six apples?

How many oranges are one-half of six oranges?

I have here six nuts. Belle, I will give you half of them if you can tell me how many that number is.

Johnny started with six eggs from the store, but broke half of them before he got home. How many did he break? How many had he left?

Three bonnets are what part of six bonnets?

You have shown me one half of six; show me two halves of six.

How many blocks in two halves of six blocks?

How many apples in two halves of six apples?

How many cents in two halves of six cents?

How many nuts in two halves of six nuts?

How many balls in one half of six balls? in two halves of six balls?

If I divide six cards equally between two girls, how many shall I give to each girl? What part of the whole number will each have?

#### § 18. COMPARISON OF SIX WITH NUMBERS KNOWN.

One hen had six chickens, another five; how many more did the first have than the second?

I have here two three-cent stamps, and here two two-cent stamps and a one-cent stamp. Which cost the more? How much more?

Mary has six cents; I have four. Which has the more? How many more has Mary?

Which have more legs, three boys or a chair? two boys or a chair? two boys or a dog? two boys or a hen?

These six postal cards cost a cent apiece; this bunch of envelopes four cents. Which cost more cents? How many more cents?

Here are three two-cent coins, and a five-cent coin; which is worth the more? How much more?



Mira writes six stories on her slate while Harry is writing three. Which writes the more stories? How many more does Mira write?

In one half a window, a man puts six panes of glass; he has four panes already set; how many more has he to set?

I have written six letters, and I find I have only four envelopes; how many more do I need?

In a half-dozen there are six things; in a quarter of a dozen three things. Which had you rather have, a half-dozen sticks of candy, or a quarter of a dozen?

One basket has in it a half-dozen eggs, and another a quarter of a dozen. How many more has the one than the other?

A quire of one kind of paper costs six cents, and a quire of another kind four cents; which costs the more?

Your mother pays six cents a pound for flour, and two cents a pound for meal. How much more does the flour cost than the meal?

Your father pays six dollars for his boots, and two dollars for your boots. How much more does he pay for his own boots?

Milk is six cents a quart in the winter, and four cents a quart in the summer. How much more does milk cost in the winter than in the summer?

Two little girls were hunting for pins. One found six, and the other found one. How many more did one find than the other?

Two little boys were bouncing ball. One missed six times, and the other once. How many more times did one miss than the other?

Show me six blocks in a row.

Show me right below them five in a row.

Right below the five, four blocks in a row.

Show me three in a row ; two in a row.

Show me one beneath them all.

Which row has the most ?

How many more in the six-row than in the row below it ?

How many more in the five-row than in the row below ?

How many more in the three-row than in the row below ?

How many more in the two-row than in the row below ?

How many must you put with one to make two ?

How many must you put with two to make three ?

How many must you put with three to make four ?

How many must you put with four to make five ?

How many must you put with five to make six ?

Show me six dots on the board ; put below them one dot.

How many more dots in six dots than in one dot ?

Tell me a story about this.

Show me another six dots on the board ; put below them two dots.

How many more in six than in two ?

Tell me a story about this.

Show me six dots with three dots below them.

How many more in the six than in the three ?

Tell me a story about this.

Show me six dots with four dots below them ?

How many more in the six-row than in the four-row ?

Tell me a story about this.

Show me six dots with five dots below them.

How many more in six than in five ?

Tell me a story about this.

I have here five pencils. I own six pencils. How many more have I than I show you ?

I have five cents in my pocket. I need six cents to make change. How many more cents must I have ?

Two drawers have four handles ; three have six handles. How many more handles have three drawers than two drawers ?

Willie has learned four words, George six. How many more words has George learned than Willie?

A fly has six legs. How many more legs has a fly than a mouse?

John has told me three things a bird can do; Mamie has told me six. How many more things did Mamie think of than John?

Mary has six dolls; Lena half as many. How many more has Mary than Lena?

A pint of milk costs three cents; a quart six cents. How much more does a quart cost than a pint?

Ned had but two cents, and wanted a six-cent book. His father told him he might have the book if he could tell him how many more cents he needed to buy it. How many more cents did he need?

A little girl has filled two salt-cellars. She had six to fill in the first place. How many more has she to fill?

She has put two plates on the table. How many more must she put on to have six on the table?

Susie is two years old. In how many years will she be six years old?

Tottie is a year old. In how many years will she be six years old?

Nellie is five years old, and Jennie one year old. Which will have her sixth birthday first?

James and Susie each earn a cent a day. James has already earned four cents, and Susie three. Which must work more days to earn six cents? How many more days?

Six minus one are how many?

Six minus two are how many?

Six minus three are how many?

Six minus four are how many?

Six minus five are how many?

Six minus six are how many?

Five and one are how many?  
 Four and two are how many?  
 Three and three are how many?  
 Two and four are how many?  
 One and five are how many?  
 Five and how many are six?  
 Four and how many are six?  
 Three and how many are six?  
 Two and how many are six?  
 One and how many are six?  
 How many and one are six?  
 How many and two are six?  
 How many and three are six?  
 How many and four are six?  
 How many and five are six?  
 Three twos are how many?  
 Two threes are how many?  
 Six ones are how many?  
 How many ones in six?  
 How many twos in six?  
 How many threes in six?  
 How many sixes in six?  
 Count by twos to six.  
 Count backward by twos from six.  
 Five are how many more than three?  
 Six are how many more than two?  
 Two are how many less than five?  
 Five are how many less than six?  
 Five are how many more than two?  
 Four are how many more than one?  
 One is how many less than six?  
 Copy:

•  
one.

• •  
two.

• • •  
three.

• • • •  
four.

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• • •  
five.

• • •  
• • •  
six.

### Pints in a Quart.

Look at these measures. (Pint and quart measures.)  
Who knows what this is called? what this is called?

Here is some water. I will fill the pint measure, and pour the water into the quart measure. Does it fill it? I will fill the pint measure again, and pour the water into the quart measure. Is the quart measure full now?

How many times did I fill the pint measure?

How many pints of water does it take to make a quart of water?

Annie may find how many pints it takes to make a quart.

Ned may find how many pints it takes to make a quart.

Susie may find how many pints it takes to make a quart.

How many pints of water make a quart of water?

How many pints of milk make a quart of milk?

How many pints of molasses make a quart of molasses?

How many pints of oil make a quart of oil?

You may write on your slates, "Two pints of water make a quart of water."

If there is a quart of water in a pail, how many pint measures will it take to hold the water?

It takes half a pint of molasses for one loaf of gingerbread. I have used a quart of molasses in making gingerbread; how many loaves have I made?

Mary drinks a half pint of milk every morning. How much will she drink in four mornings?

It takes a pint of milk to make one bowl of custard. How many bowls of custard can I make from a quart of milk?

If a quart of water weighs two pounds, how much will a pint of water weigh?

If one quart of berries costs six cents, what will a pint of berries cost?

If a quart of milk costs six cents, what will a pint of milk cost?

If I pick a pint of berries in half an hour, how long will it take me to pick a quart?

I give my chickens a pint of dough every morning. In how many mornings shall I give them a quart?

If two pints of peanuts cost six cents, what will a quart of peanuts cost?

If a quart of paint is required to paint a fence, how many pints will it take to paint the fence?

If a baker bakes a quart and a half of beans in a pot, how many pints does he bake in a pot?

How many pints in three quarts? in two quarts?

In six pints how many quarts?

In five pints how many quarts, and what part of a quart over?

In four pints how many quarts?

In three pints how many quarts, and what part of a quart over?

In one-half of six pints how many quarts, and what part of a quart over?

In one-half of four pints how many quarts?

One-half of two pints is what part of a quart?

Two halves of two pints are how many quarts?

If a horse eats two and a half quarts of corn for his dinner, how many pints of corn does he eat?

A two-quart pail lacks one pint of being full; how many pints are in the pail?

Two half-pint cups of water are poured into a three-pint measure; how many pints of water will be required to fill the measure?

## CHAPTER VI.

### THE NUMBER SEVEN.

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#### § 19. SEVEN AS A WHOLE.

Show me six blocks.

Put one more with them.

You have shown me seven blocks.

I will show you just as many as you have shown me.

How many do I show you?

Take six cards; now take one more card.

How many cards have you?

Show me seven fingers; seven pieces of paper; seven blocks; seven words on the board; seven i's on this slate; seven desks; seven panes of glass; seven bits of crayon; seven paper patterns; seven joints on one hand; seven buttons on your jacket; seven splints.

Make seven dots on the board; seven straight lines; seven triangles; seven crosses; seven squares.

Who has seen seven houses? seven horses? seven persons? seven children? seven cars? seven trees? seven steps? seven books? seven slates?

Where have you seen seven things, Annie? Mary? Susie? Belle? Mamie?

Name seven things in this room; seven things in the parlor at home; seven animals; seven birds; seven kinds of fruit.

Copy the word **seven**.

## § 20. DISCOVERIES IN SEVEN.

Who can do something with seven?  
What have you done?  
Who can do something else?  
Tell me what you have done.  
Who can do something else?  
Who can do something else?  
What can you take away from seven?  
How many have you left?  
What else can you take from seven?  
How many have you left?  
What else can you take away from seven?  
How many have you left?  
Arrange seven dots on the board, all the ways you can.

**Exercise for Review.**

Show me a line an inch long.  
Draw a square an inch on each side.  
Draw a figure on the board having the ends an inch in length, and the other sides two inches each in length.  
Draw a figure having six sides, and each side an inch long.  
Draw a square an inch on each side, and have a corner point toward each side of the board.  
Draw a line two inches long, and divide it into halves.  
Draw a line four inches long, and divide it into halves.  
I had several errands to do this morning. I had time for only four, but I shall do the other two at noon. How many errands had I to do in all?  
Nettie had several cents when she started for school this morning. She spent four for a sponge, and has three left. How many did she have at first?



Ned has just so many things to do every morning; when he has done three, he can say, "Now I have only three more to do." How many things has he to do in the first place?

Willie drives the cows from the pasture every night. Three are usually at the bars, but the other two stay to feed. How many has he to drive home in all?

There was a number of street-cars standing in a row; after four moved on, two remained. How many were there at first?

If one log will make four planks, how many planks will a log and a half make?

If a driver hauls four loads of wood a day, how many loads will he haul in a day and a half?

If it takes a yoke of oxen and a horse to draw one load, how many animals does it take?

If there are three loads of wood on the street, each drawn by a yoke of oxen, how many oxen are required to draw the wood?

How many panes of glass in a window that has three panes across, and two up and down?

I divided six apples equally among two boys. How many apples did I give to each?

I divided six cents among some boys, giving two to each boy. To how many boys did I give them?

## § 21. FACTS IN SEVEN.

### Six and One.

Harry may give me six watches. Alice may give me one more watch. Who will tell me how many watches I have?

Nellie may give me six pitchers. Arthur may give me one more pitcher. How many pitchers do I have?

Six red rings and one blue ring are how many rings?

Point to a group of six stars on the chart. Point to one more star. To how many stars have you pointed ?

Six *i*'s and one *i* are how many *i*'s?

Tell me a story about six and one.

Tell me another ; another ; another ; another ; another ; another.

Write : Six and one are seven.

### One and Six.

Show me seven blocks.

Show me one of them ; show me the rest. How many are there?

One block and six blocks are how many blocks?

One button and six buttons are how many buttons?

One horse and six horses are how many horses?

One boy and six boys are how many boys?

One picture-book and six picture-books are how many picture-books?

Tell me a story about one and six.

### Exercise for Review.

I paid six cents for a spool of thread and a paper of pins. The paper of pins cost four cents ; what did the spool of thread cost?

There were six at table this noon, and each had a chicken-leg. How many chickens must there have been?

How many of us might have had a wing?

If one ate two wings, how many wings were left for the others?

How many wish-bones were there to distribute among us?

What part of the number at the table could have wish-bones? how many could have a chance to wish?

John earns a cent a day. Monday he finds he has four cents with the cent he earned that day. On what day will he have six cents?

If he then spends three cents, on what day will he again have six cents?

If then he buys two pencils, at two cents each, on what day will he again have six cents?

How many more cents can he earn that week?

A boy receives a cent for every half-dozen newspapers he sells. How many half-dozen newspapers must he sell to earn six cents? how many dozen newspapers?

I bought two lemons, at two cents apiece, and gave a five-cent piece in payment. How much money ought I to have received in change?

Tell me all the pairs of numbers which, put together, will make the number six; all the pairs of numbers which, put together, will make the number five; all the pairs of numbers that will make the number four.

I have one Christmas-card, and Ellen has six; how many have we together?

I bought a one-cent stamp this morning, and two three-cent stamps; how much money did I spend?

If I had bought two three-cent stamps and a one-cent stamp, how much should I have spent?

There were three cows in the pasture; one cow had no horns. How many horns did the three cows have?

A cow has no upper front teeth; how many upper front teeth have seven cows?

Annie has two dolls, and Mary four dolls; how many dolls must Mary give Annie that they may each have the same number?

James has three cents, and his sister one cent; how many cents must James give his sister that each may have the same number of cents?

I have five shells, Ned has one; how many shells must I give Ned that we may each have the same number of shells?

I guessed that a package weighed four ounces, and Joe guessed it weighed three ounces. It weighed three ounces and a half. Which made the better guess?

### Seven minus One.

Who will find seven things on the table first?

Do as I do. (I put one under the table.)

How many have you taken away?

How many have you left on the table?

Tell me a story about this.

Tell me another story about this; another; another; another.

If there are seven men walking along the street, and one loses his hat, how many men have hats on?

If you have seven paper dolls, and one is swept into the fire, how many will you then have?

Annie owned seven doves, but one died; how many did she then have?

There are seven cattle in the pasture; one of them is lying down, the rest are feeding. How many are feeding?

### Exercise for Review.

Read what I show you with the blocks.

Read what I show you with the dots on the board.

Ed had six hens, but sold half of them; how many did he have left?

After Nettie had spent half her money, she had three cents; how much did she have at first?

After Willie had copied three words, he had just as many more to copy; how many did he have to copy in all?

After Lizzie had copied two words, she had twice as many more to copy ; how many words did she have to copy altogether?

Mary has six words to learn, Jane four words ; how many more words has Mary to learn than Jane?

One-half of six is how many more than one-half of four?

One-half of four is how many more than one-half of two?

One-half of six is how many more than one-half of two?

I guessed it took six hours to go to New York, and George guessed it took four hours. Neither was right, but one was just as nearly right as the other ; how many hours did it take?

After John had brought in one armful of wood, he had three times as many more to bring in ; how many armfuls did he have to bring in at first?

Ruth has a strip of paper six inches long which she wishes to cut into strips two inches long. How many times must she cut the paper? How many strips will she have?

### Seven minus Six.

Take seven blocks. Put six under the table. What have you left on the table?

I had seven children with their hands under the table a moment ago ; now six of them have their hands on the table ; how many have hands under the table?

There are seven days in a week ; we work six days ; how many days have we for rest?

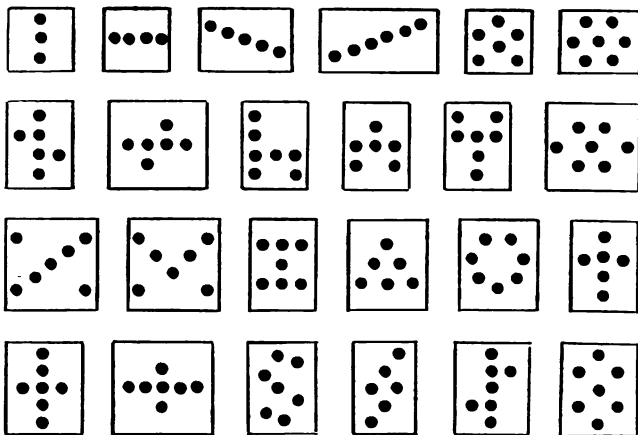
There are seven windows on the side of a house ; six are arranged in pairs ; how many are there besides the six arranged in pairs?

If Mary bought three pears, at two cents each, and gave in payment for them a five-cent piece and a two-cent piece, how much money should she receive back?

Tell me a story about seven minus six.

**Exercise for Review.**

Tell the number of dots as I point.



Make an example for what I show you with the blocks.

Mary may give examples for the class.

I have a ball which is two inches through; if it is three times as far round the ball, how large round is the ball?

On Nellie's sixth birthday she had six little girls to tea; how many little girls were there then?

If she is six years old now, how old will she be a year from now? How old was she her last birthday? How many years ago was she half as old as she is now?

If a train moves a mile in two minutes, how many miles will it move in six minutes? what part of a mile in one minute?

If a horse is five years old, in how many years will he be six years old?

If Maggie picks a pint of berries a day, how many quarts of berries will she pick in a week?

**Five and Two.**

Take seven blocks. Put them in groups of five and two. Five blocks and two blocks are how many blocks?

One of two girls had five books, the other had two; how many books had they together?

John had five brown rabbits and two white ones; how many rabbits had he?

A little boy going to school met five of his playmates, who walked to school with him; on their way they met two of their classmates going fishing. How many of his school-mates did the boy meet?

Annie was to have a birthday party; she had two sisters, and her mother told her she might invite five of her friends. How many were there at the party beside herself?

Some boys coasting down hill had fastened five sleds together, when two more boys came along each with a sled; when these were joined, with how many sleds did they start down hill?

Frank's mother wished him to do an errand for her; before he could go, he had to find his hat, which took five minutes, and his mittens, which took two minutes more. How long before he was ready to do his errand?

Frank made five sail-boats for his sister, but as part of them were lost in sailing, she got him to make her two more, without sails; how many boats in all did Frank make?

George played ball a certain number of times; his side was beaten five times, and the other side was beaten by his two times; how many games did he play in all?

A boy was sent to pick a pailful of plums; wishing to show how many he had picked, he turned them into two measures, which just held them, one containing five quarts, the other two quarts. How many quarts did he pick?

**Exercise for Review.**

If Harry gives me one cent, Mary gives me two cents, Jamie gives me three cents, and Nellie one cent, how many cents will I have?

Two pencils and three pencils and two more pencils are how many pencils?

Five birds are in a tree; two birds fly away, then three birds fly away; and then four birds fly into the tree. How many birds are in the tree?

Seven crows were on the ground; one of them flew away, and four flew into a tree; afterwards two of the four crows flew down upon the ground, and then the other two flew down. How many were on the ground then?

Write what I show you. (Have the operation which is shown expressed in *words*, on board or slate, thus: One and two are three; Four minus one are three.)

In a class of seven children there is only one girl; how many are boys?

If two boys and two girls and two dogs are running in the field, how many are running in the field?

On one twig there were five cherries, and on another two cherries; how many cherries were on both twigs?

If one-half of four sheep have two lambs each, and the other half have one lamb each, how many lambs are there in all?

**Two and Five.**

George has two marbles, and John has five marbles; how many marbles have both?

Annie has two apples, and Susie has five apples; how many apples have both?

John went fishing twice last week. The first time he caught only two fish, but the next time he caught five; how many fish did he catch in all?



Yesterday Annie's aunt gave her two cents, and her uncle gave her five cents; how much money had she then?

George sawed two sticks of wood this morning, and five more this afternoon; how many sticks of wood did he saw?

In my new picture-book there is a picture of two kittens running after a ball, and five more asleep on a rug; how many kittens are there in all?

The other morning Addie saw two birds in one tree, and five in another; how many birds did she see in all?

There are two blocks on my desk, and five blocks on Susie's; how many blocks are there in all?

### Exercise for Review.

If a little house-fly should lose four of its legs, how many legs would it then have?

I have a little paper measure which is six inches long; if I cut off two inches, how long will it be?

Addie has six splints with which to make figures to-day; yesterday I gave her but four; how many more has she to-day?

Six children were drawing on the board, but two have taken their seats; how many remain at the board?

How many quarts will a six-pint pail contain?

How many pairs of legs has a house-fly?

How many legs has he on a side?

If there were five boys skating on the pond, and two more came to join them, how many boys would be on the pond?

If George, in skating, fell down five times, and then two times more, how many times did he fall down?

I have a five-cent piece and a two-cent piece; how much money have I?

I have a three-cent piece, a two-cent piece, and one cent; how much money have I?

If I owe you seven cents, and pay you in two-cent pieces, as far as I can, what else must I give you? How many two-cent pieces do I pay you?

If I owe you six cents, and give you three pieces of money in payment, what can the pieces of money be? What else can the pieces of money be?

If I paid you with two pieces of money, what could the pieces be? What else could the pieces be?

If I paid you with six pieces of money, what would the pieces be? If I paid you with five pieces of money? If I paid you with four pieces of money?

Three two-cent pieces are how much money?

A three-cent piece, a two-cent piece, and one cent are how much money?

Two three-cent pieces are how much money?

A five-cent piece and one cent are how much money?

A two-cent piece and four cents are how much money?

A three-cent piece and three cents are how much money?

### Seven minus Two.

Ned had seven fish-hooks, but lost two; how many had he left?

It rained two days last week; how many days were pleasant?

Seven cousins were invited to a picnic; two could not go. How many went?

If I have seven nuts, and crack two, how many whole nuts have I then?

If I make seven snow-balls, and throw two, how many have I left?

The cook has seven pies in the oven. If she takes out two, how many will be left in the oven?

There were seven pins on the carpet. Susie picked up two. How many pins were left on the carpet?

Uncle Ned had seven pennies in his pocket. He gave two to Willie. How many had he left?

There were seven apples on one branch; two fell off. How many were left on the branch?

Ned was at home only two days last week; how many days was he away?

There are seven lamps in a room; two are not lighted. How many are lighted?

There are seven sleighs on the street; two have no bells. How many have bells?

You may tell me a story about seven minus two.

Write on your slate: Seven minus two are five.

Illustrate in all the ways you can that seven minus two are five, by drawings on your slate.

### Exercise for Review.

Tell the number of dots as I point. (See p. 94.)

Make an example for what I show you. (See p. 61.)

I will give you examples, and you may show me what is meant.

Write on your slate what I show you. (This is just the same as the reading, only the fact is written instead of spoken.)

Read what you have written.

Name all the numbers less than seven.

Name a number that is three more than two; that is three more than three; three more than one.

Name a number that is two more than four; that is two more than five; two more than three; two more than one.

Name a number that is four more than two; four more than one.

Three and three are how many?

Two and two are how many?

If half of six blocks are taken away, what part of the six blocks will be left?

Name a number that is two less than six; two less than five; two less than seven.

Name a number that is three less than five; three less than four; three less than six.

### Seven minus Five.

Paul caught seven butterflies, but let five fly away; how many butterflies had he left?

Johnny goes to school five days in the week; how many days does he stay at home?

Tom picked seven quarts of blueberries, but sold five quarts; how many had he left?

Mary has seven brothers and sisters. She has five brothers; how many sisters has she?

Minnie's geranium had seven blossoms, but she picked five; how many blossoms had she left?

Susie had seven paper dolls, but her baby brother spoiled five; how many paper dolls had she left?

Tim had seven oranges, but gave away five; how many oranges had he left?

Charlie goes seven miles to see his grandmother. He rides five miles, and walks the rest of the way; how many miles does he walk?

Mattie had seven birthday and Christmas cards. Five were Christmas cards; how many were birthday cards?

Seven kittens are playing in the yard. Five are gray, and the rest white; how many are white?

### The Gill.

Who has seen a little cup like this at home?

Who has seen a little cup like this at the tin-shop?

What do you call such a cup?

Who ever picked a gill of berries? bought a gill of peanuts? drank a gill of water at one time? bought a gill of yeast at the baker's?

You may write the word *gill* on your slate.

Look at this. (Pint measure.) What do you call it? Which will hold more, the gill or the pint measure?

For which will you have to pay more, for a gill of nuts or for a pint of nuts? for a gill of milk or for a pint of milk? for a gill of vinegar or for a pint of vinegar?

### Gills in a Pint.

Nettie may fill the gill cup with water. Pour it into the pint measure. Is the pint measure full?

Put another gill of water in the measure.

How many gills are in the measure now? Is it full?

Put another gill in the measure.

How many gills does it take to fill the pint measure?

Johnny may measure and see if it takes four gills of water to make a pint of water.

In a pint of milk how many gills of milk?

In a pint of vinegar how many gills of vinegar?

In a pint of yeast how many gills of yeast?

In a pint of molasses how many gills of molasses?

Johnny picks berries in a gill cup; how many times must he fill it to have a pint of berries?

If your mother uses a gill of yeast each time she makes bread, how many times can she make bread from a pint of yeast?

If it takes two gills of molasses to make a loaf of ginger-bread, how many loaves can be made from a pint of molasses?

A coffee-cup holds half a pint; how many gills does it hold?

A saucer holds half a pint; how many gills does a saucer hold?

I have a mug which holds half a pint; how many gills does it hold?

Two gills are what part of a pint?

If I put two gills of water in a pint measure, how near full is it?

If there is only one gill of milk in a pint measure, how many more gills can I put in it before it is full?

You may write on your slates: Four gills make one pint.

### Exercise for Review.

If one spool of thread costs two cents, what will three spools cost?

If I have seven cents, how many cents shall I have left after paying for the three spools of thread?

In a group of seven stars two are so faint that I can scarcely see them; how many can I see plainly?

Seven children are busy at the table. Five are building block-houses, and the rest are laying sticks; how many are laying sticks?

Those who were laying sticks, and three of the others, have gone to their desks; how many remain at the table?

The two who remained at the table, and four others, have now gone to the board to draw; how many are drawing at the board?

In two years more Nellie will be seven years old, and Jessie five; how much older is Nellie than Jessie now?

**Four and Three.**

Katie made four fans, and Jessie made three; how many did they both make?

Harry caught four trout, and Tom caught three; how many did both catch?

Jamie had four bunches of grapes, and picked three bunches; how many bunches had he then?

Annie has four yards of ribbon, and Mary has three; how many yards of ribbon have they together?

Charlie's father has four horses, and Lena's father has three; how many horses have both?

Johnny picked four cherries and afterwards three cherries; how many cherries did he pick in all?

Susie swept four rooms, and Rose swept three rooms; how many rooms did they sweep in all?

Frank skated four miles Wednesday and three miles Thursday; how many miles did he skate in all?

Ned found four eggs in the barn, and Isaac three; how many eggs did they find together?

Three dogs were chasing four foxes; how many animals were running?

Fanny cut out four cookies, and Belle cut out three; how many cookies did both cut out?

Joe rolled four marbles, and George rolled three; how many marbles did both roll?

**Exercise for Review.**

If Mary has five cents, and I have two, and Mary gives me one cent, how many cents will each have?

If Louis has seven cents, and I five, and Louis gives me one cent, how many cents will each have?

If two men are six miles apart, and each walks toward the other two miles, how many miles are they apart then?

Ina has seven cents, Ellen five. Jennie has more than Ellen and less than Ina. How many cents has Jennie?

In a bird's nest there are seven birds; five are little birds, the rest are old birds; how many are old birds?

Kittie has seven cousins, and Ralph has five; how many more cousins has Kittie than Ralph?

Mamie has seven dolls, but Charlie has hidden five; how many has Mamie to play with?

If Albert throws four snow-balls, and Cyrus throws three, how many snow-balls do both throw?

Write on your slates the word that stands for the number which I show you.

Mary picked four quarts of blueberries, and Lucy three; how many did both pick?

What will a quart of milk cost at three cents a pint?

What will a quart and a half of milk cost at two cents a pint?

If a gill of peanuts cost two cents, what will half a pint of peanuts cost?

If half a pint of syrup cost six cents, what will a gill of syrup cost?

George earns two cents every other day in the week, and Harry earns one cent every day. Which earns the more money in a week?

There is a group of stars called the dipper; four stars form the handle and three others the cup; how many stars are there in the dipper?

If there were four showers last week, and three this week, how many showers were there in all?

Divide seven into two such groups that there will be one more in one group than in the other group.

Divide seven into three such groups that one will be larger by one than either of the other groups.



**Three and Four.**

A hen has three white chickens and four black chickens; how many has she in all?

If I have three nuts, and Johnny gives me four, how many nuts have I then?

Charlie brings in three armfuls of wood, and Bertie brings in four; how many do both bring in?

If there are three boys skating on the pond, and four more come to join them, how many are then skating?

If three boys are riding on a sled, and four more jump on, how many are then on the sled?

If Katie slides down hill three times in the morning, and four times in the afternoon, how many times does she slide down hill?

Susie found a nest with three eggs in it, and Amy a nest with four eggs in it; how many eggs did both find?

If I ascend three rounds of the ladder, and there are four more to ascend, how many rounds has the ladder?

**Exercise for Review.**

Seven minus six are how many?

Seven minus what number leaves one?

What number minus six leaves one?

Seven minus five are how many?

Seven minus what number leaves two?

What number minus five leaves two?

Seven minus two are how many?

Seven minus what number leaves five?

What number minus two leaves five?

Two and five are how many?

Five and two are how many?

Two and what number are seven?

Five and what number are seven?  
What number and two are seven?  
What number and five are seven?  
Four and three are how many?  
Four and what number are seven?  
What number and three are seven?  
Three and four are how many?  
Three and what number are seven?  
What number and four are seven?

### Seven minus Three.

There were seven rolls on the plate; after three were taken how many remained?

Nellie is knitting a wrist; she knits seven times round it every day; when she has knit round it three times how many more times has she to knit round it?

I am at home three days in the week; how many days am I away from home?

We have seven weeks' vacation in the summer; if I work three weeks, how many weeks have I for rest?

If Ralph must learn to spell seven words, and has learned to spell three, how many more has he to learn to spell?

If you have seven cups and saucers to wipe, and have wiped three cups and saucers, how many more must you wipe?

Seven children were making clay balls; three have their balls made; how many are still making clay balls?

Seven children are working in clay; three are making cubes, and the rest are making cylinders. How many are making cylinders?

It rained three days last week. How many days were pleasant?

Copy: Seven minus three are four.

**Seven minus Four.**

If it is seven miles to a certain lake, and I have travelled four miles, how much farther must I travel before I reach the lake?

If there are seven cows in a pasture, and four are driven out, how many will remain in the pasture?

If it takes seven yards of velvet to make my dress, and four yards to make yours, how many more does it require for my dress?

I have seven cents. If I spend four cents for a bunch of envelopes, how many cents will be left?

I gave seven little boys some number work to do; four have their work done. How many are still working?

If there were seven boys playing ball, and four left the game, how many were left to continue the game?

Show me on the board that seven dots minus four dots are three dots.

Show me that seven straight lines minus four straight lines are three straight lines.

Write : Seven minus four are three.

**Exercise for Review.**

Two pencils, three pencils, one pencil, and one pencil are how many pencils?

Three sheep, two sheep, and two sheep are how many sheep?

Four chickens and three chickens are how many chickens?

A figure of patch-work had two pieces on each of two sides, and one piece on each of the other two sides; how many pieces did the figure contain?

We have in our barn two old cats and five kittens; how many cats and kittens have we in all?

If there are three mugs on the table, and I put four more on the table, how many mugs will be on the table?

If only three of these mugs have milk in them, how many do not have milk in them?

If I have seven little fans, and give you four, how many fans shall I have left?

If I have seven letters to write, and I write three, how many more shall I have to write?

How many strokes does the clock strike between half-past twelve and half-past three?

I have a book which has as many leaves as there are days in the week less one; how many leaves has it?

How many pairs of skates and how many odd skates have you if you have seven skates?

How many pairs of gloves and how many odd gloves have you if you have seven gloves?

How many boots will there be in three pairs of boots and one odd boot?

If Jamie has seven yards of line to his kite, and John has two yards in one piece of his line, three in another piece, and one yard in each of two other pieces of his line, who has the longer line to his kite?

Which is more money, a five-cent piece and a two-cent piece; or, a three-cent piece, a two-cent piece, and two cents?

Which cost more, two books at three dollars each, and one book at one dollar; or, three books at two dollars each, and two books at a half-dollar each?

If it takes two yards and a half of cloth to make a jacket, how much cloth will it take for two jackets?

If a confectioner uses three ounces and a half of chocolate for one lot of taffy, how many ounces will he use for two such lots?

If two quarts of maple syrup will make three pounds of sugar, what will a quart of maple syrup make?

If two cakes of maple sugar weigh together a pound, what part of a pound will one cake weigh?

How many pounds will four cakes weigh?

How many pounds will six cakes weigh?

What will seven cakes weigh?

How many cakes that weigh a half a pound each will it take to equal three cakes that weigh a pound each?

If half a pint of syrup makes half a pound of sugar, what will four gills of syrup make?

If the cars pass our house every half-hour, how many times will they pass the house in three hours and a half?

Name two numbers which together make seven.

Name all the two numbers which together make seven.

Three and three and how many are seven?

Two and three and how many are seven?

One and three and how many are seven?

Three and how many are seven?

Four and how many are seven?

Two and how many are seven?

Seven minus two minus four are how many?

Seven minus three minus two are how many?

Seven minus two minus two are how many?

Seven minus one minus two are how many?

Seven minus two are how many?

### Seven minus Seven.

Johnny had seven marbles, but on his way to school he lost seven of them; how many had he left?

There were seven eggs in a nest, but seven of them got broken; how many were there left in the nest?

Minnie had seven paper dolls, but gave seven of them to her little sister ; how many had she then ?

In the school-yard there are seven boys playing ball, and seven playing marbles ; how many more boys are playing ball than are playing marbles ?

Harry made seven snow men, but seven of them melted away ; how many were left ?

George had seven rabbits, but seven of them got away ; how many had he then ?

Fannie's uncle gave her seven pet doves, but seven of them were sick and died ; how many had she then ?

There were seven mice playing in the cellar ; the old cat caught seven of them ; how many mice were left playing in the cellar ?

In a doll-carriage seven dolls were riding, but seven of them were tipped out ; how many were left in the carriage ?

Seven robins were singing in a tree ; a boy threw a stone and frightened seven of them away ; how many robins were left singing in the tree ?

Copy : Seven minus seven is none.

### Seven divided by One.

Take seven blocks. Show me one of your seven blocks. Show me another ; another ; another ; another ; another ; another.

How many one-blocks in your seven blocks ?

If there were seven oranges here, how many of us could have one apiece ?

Seven lamp-chimneys will supply how many lamps ?

Seven lamp-shades will supply how many lamps ?

Seven slates will supply how many children ?

I have seven hanging-pots of flowers ; if I hang one at a window, at how many windows can I hang them ?

I have seven brackets ; if I put each on a hook by itself, how many hooks will it take?

I have seven bottles to pack ; it takes a box for each bottle ; how many boxes must I have?

Write : There are seven ones in seven.

### Seven Ones.

How many heads have seven boys?

How many hats will seven boys need?

If I read a book every day, how many books shall I read in a week?

If I read an hour each day, how many hours shall I read in a week?

If a bottle of ink lasts me a year, how many bottles shall I use in seven years?

If a family uses a barrel of flour a month, how many barrels will they use in seven months?

If I must wind my watch once a day, how many times must I wind it in a week?

If my watch loses a second a day, how many seconds will it lose in a week?

If you put a cent in the box every Sunday, how many cents will you put in in seven Sundays?

You may tell me a story about seven ones.

Write on the board : Seven ones are seven.

### Seven divided by Seven.

How many yards of print, at seven cents a yard, can you buy for seven cents?

How many pounds of potatoes, at seven cents a pound, can you buy for seven cents?

How many bunches of violets, at seven cents a bunch, can you buy for seven cents?

How many roses, at seven cents a rose, can you buy for seven cents?

How many loaves of bread, at seven cents a loaf?

How many bottles of ink, at seven cents a bottle?

How many quires of paper, at seven cents a quire, can be bought for seven cents?

How many sponges, at seven cents a sponge?

Write: There is one seven in seven.

## § 22. COMPARISON OF SEVEN WITH NUMBERS KNOWN.

If you have seven apples, and I have six apples, how many more have you than I?

If a horse goes seven miles an hour, and a mule six miles an hour, how many more miles does the horse travel than the mule?

There are seven nuts in one of my hands, and six in the other; how many more in one than in the other?

If you have seven miles to ride, and I have six, how much farther have you than I to ride?

If Willie has seven words to copy, and George six, how many more words has Willie than George to copy?

John has seven rabbits, Cyrus has five; how many more rabbits has John than Cyrus?

One hen has seven chickens, another hen has five chickens; how many more has one hen than the other?

I can pick seven quarts of berries in the morning, Mary can pick five; how many more can I pick than Mary?

There are seven children on one settee, and five on another; how many more are there on one than on the other?

If you write seven stories in the morning, and five in the afternoon, how many more do you write in the morning than in the afternoon?



Seven books are on one shelf of the book-case, and four on another; how many more are on one than on the other?

There are seven boys and four girls in my second class; how many more boys than girls are there?

How many more strokes does the clock give for seven o'clock than for four o'clock?

One train leaves the station at four o'clock in the afternoon, the other at seven o'clock in the afternoon; how much later does the one leave than the other?

If half a pound of sago costs seven cents, and half a pound of rice four cents, how much more does the sago cost than the rice?

One boy earns seven cents a week, another boy earns three cents; how much more does one earn than the other?

It costs seven cents to send a package; how much more does it cost than to send an ordinary letter?

There were seven spools of thread in one box, and three in another; how many more spools were there in one than in the other?

If there are seven plants in one window, and three in another, how many more are there in one than in the other?

If there are seven empty chairs in one row of seats, and three in another row, how many more empty chairs are there in one row than in the other?

There are seven white clouds in the sky, and two gray ones; how many more white clouds are there than gray ones?

In one group of stars there are seven bright stars, in another group two bright stars; how many more are there in one than in the other?

If I wear out seven pairs of shoes in a year, and my brother wears out but two pairs, how many more pairs do I wear out than he?

Ellen is seven years old, Eddie is two years old; how much older is Ellen than Eddie?

If it takes seven yards of cloth to make me a dress, and two yards to make little Annie a dress, how much more does it take for me than for Annie?

If I have seven letters in one mail, and one letter in another mail, how many more letters do I get in one mail than in the other?

There are seven pencils on my desk; on Ned's desk there is one pencil; how many more pencils are there on my desk than on Ned's?

There are seven blossoms on my geranium, but only one on the wax-plant; how many more blossoms are there on the geranium than on the wax-plant?

It rained each day last week, but has rained only one day this week; how many more days did it rain last week than this week?

A whistle costs one cent, a toy balloon seven cents; how much more does the balloon cost?

Show me that seven is one more than six.

Show me that seven is two more than five.

Show me that seven is three more than four.

Show me that seven is four more than three.

Show me that seven is five more than two.

Show me that seven is six more than one.

If I have one cent, how much more must I earn to have seven cents?

If Harry has two doves, how many more must he get to have seven doves?

If I owe you seven cents, and have only three cents, how many more cents must I have in order to pay you?

On this stem there is a whorl of seven leaves, on this stem two pairs of leaves; how many more leaves in the whorl than in the two pairs?

You remain in school five hours in the day ; how many more hours would you remain at school to be there seven hours ?

I have six yards of ribbon ; I wish for seven yards ; how many more yards must I have ?

One and how many are seven ?

Two and how many are seven ?

Three and how many are seven ?

Four and how many are seven ?

Five and how many are seven ?

Seven and how many are seven ?

Seven minus what number equals six ?

Seven minus what number equals five ?

Seven minus what number equals four ?

Seven minus what number equals three ?

Seven minus what number equals two ?

Seven minus what number equals one ?

Four is three less than what number ?

Three is four less than what number ?

Two is five less than what number ?

Five is two less than what number ?

One is six less than what number ?

Six is one less than what number ?

Show me a row of seven dots on the board.

Put under them a row of six dots.

Put a row of five dots.

Make a row of four dots.

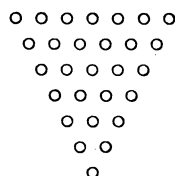
Make three dots in a row.

Make two dots.

Make one dot.

Tell the number of dots as I point.

(A triangle formed by making seven dots in a row, then six below them, etc., gives opportunity to compare seven with each smaller number, in different ways.)



Show me a number that is one less than seven; that is two less than seven. Show me a number that is three less than seven; that is four less than seven; that is six less than seven; that is five less than seven; that is no less than seven.

For seven cents how many one-cent stamps can I buy? How many two-cent stamps, and how many cents shall I have left? How many three-cent stamps, and what will remain?

How many four-cent pencils can I buy for seven cents, and how many cents shall I have left?

How many oranges, at five cents an orange, can be bought for seven cents, and how many cents will be left?

How many dozen buttons, at six cents a dozen, can you buy for seven cents, and how much money will you have left?

### Exercise for Review.

Name four days of the week.

Name five months.

Name six holidays.

Give the names of seven children you know.

Give the names of six streets.

Give the names of five different birds.

Name four kinds of apples you have eaten.

What three strange animals did you see at the menagerie?

Name seven kinds of business by which men make a living.

Give the names of seven different kinds of trees.

What seven different flowers have you seen?

Name seven wild flowers.

Name seven cultivated flowers.

Tell me a story for what I show you.

Tell me now; and now.

Read what I show you ; again ; again ; and again.

Show me with the blocks what I tell you :

If I have seven hens, and sell five, I shall have two hens.

Mary has four dolls and Annie three dolls ; they have together seven dolls.

I can buy three apples, at two cents each, with seven cents, and have one cent left.

With six cents I can buy two three-cent stamps.

If a six-quart pail is half full, it has three quarts in it.

If a four-pint pail is half full, it has two pints in it.

If a pint of hulled corn costs three cents, a quart will cost six cents.

If one peach costs one cent, six peaches will cost six cents.

In three quarts there are six pints.

In one pint there are four gills.

If I owe you seven cents, and pay you in three pieces of money, I can give you a three-cent coin and two two-cent coins ; or, I can give you a five-cent coin and two cents ; or, I can give you two three-cent coins and one cent.

You may find what the pieces of money will be if I pay you seven cents with five pieces of money ; if I pay you with six pieces of money ; if I pay you with two pieces of money.

Draw a line an inch long for every day in the week but Saturday ; draw a line two inches long for Saturday. Measure to see if you drew each line the right length.

You may guess how long this envelope is ; how wide it is. How long this book is ; how wide it is. How long a side of this square is. How long a side of this triangle is. How thick this book is. How deep this box is. How high this spool is.

What two equal numbers make four ?

What two equal numbers make six ?

What two equal numbers make two ?

What two equal numbers and one make five?

What three equal numbers make six?

What three equal numbers make three?

What three equal numbers and one make seven?

See these stories I have written on the board:

Three and one are —.

Two and three are —.

Four and two are —.

Five and two are —.

Four and three are —.

Three and four are —.

Three twos are —.

Two twos are —.

Six minus four are —.

Five minus three are —.

Seven minus five are —.

Seven minus two are —.

Seven minus four are —.

Seven minus three are —.

There are two threes in —. There are three twos in —.

There are two twos and one in —.

There are three twos and one in —.

Who knows what word to put in place of the blank in the first story? in the second story? in the other stories?

(Let the blank in each case be filled with the proper word; the child writing the word.)

Illustrate what I tell you: .

Of seven pocket knives which I saw, three only had blades open; how many had the blades shut?

Of seven apples which were on the table, five had no stem; how many had stems?

Five tops were spinning, but two have fallen over; how many tops are spinning?

Four cups are right side up on the table, and three are up side down; how many cups are on the table?

Four pears and two pears are how many pears?

## CHAPTER VII.

### THE NUMBER EIGHT.

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#### § 23. EIGHT AS A WHOLE.

Take seven blocks. Take one more block. Do you know how many blocks you have? You have *eight* blocks.

Show me eight chestnuts; eight spools; eight beans; eight buttons; eight fingers; eight books; eight pencils; eight marks on the blackboard; eight rounds on the settee; eight chair-legs; eight desk-stands; eight children at work; eight words on the blackboard.

Name eight things that you have seen at home; on the street.

Tell me eight things you have seen at the fair.

Tell me eight things you can do.

Arrange eight dots on the board in all the different ways you can.

Name eight letters you have learned to write.

Name eight words you can write, and take a block for each word.

Name eight numbers you know.

Name eight vegetables; eight animals; eight pieces of furniture; eight sounds you hear every day; eight different things you can see in the room.

Copy the word *eight* on your slate.

Take eight splints and arrange them all the ways you can. Copy the figures which you make with the splints.

**§ 24. DISCOVERIES IN EIGHT.**

Who can find two numbers that together make eight?

What two numbers make eight?

Name every two numbers which together make eight.

What numbers can you find in eight?

What will remain after taking each one of these numbers from eight?

What two equal numbers make eight?

What four equal numbers make eight?

What eight equal numbers make eight?

What one number makes eight?

How many fours can you find in eight? How many twos? How many ones? How many eights?

Show me one half of eight; two halves of eight.

What is one half of eight? two halves of eight?

**§ 25. FACTS IN EIGHT.****Seven and One.**

Each take seven blocks. Take one more block. How many blocks are seven blocks and one block?

Show me eight other objects in seven and one.

I can see on my chart seven stars, and one more star in the same row. Who sees what I see? How many stars do you see?

Tell me a story about this.

Tell me a story about seven cows and one cow.

Tell me a story about seven daisies and one daisy.

Tell me a story about seven butterflies and one butterfly.

Tell me a story about seven eagles and one eagle.

Tell me a story about seven buttercups and one buttercup.

If the week had one more day, how many days would there be in a week?



It took a week and one more day to cross the Atlantic Ocean; how many days did it take?

In two months there are seven weeks and one week; how many weeks in two months?

George is seven years old; how old will he be a year from now?

I have learned seven stanzas of a hymn, and there is one more stanza to learn; how many stanzas has the hymn?

There were seven wheels on a car, and one more wheel was ready to be put on; how many wheels would there be on the car when this one was put on?

Tell me stories about seven and one.

Write: Seven and one are eight.

### One and Seven.

Show me one block. Show me seven more.

One block and seven blocks are how many blocks?

One spool and seven spools are how many spools?

One horse and seven horses are how many horses?

One man and seven men are how many men?

Tell me a story about one and seven; another; another; another; another.

In one corner of this card there is one dot, and in another corner seven dots; how many dots are there on the card?

If I have one stick of candy, and Jennie has seven, how many have both of us?

I paid one cent for a skein of linen thread, and seven cents for a spool of linen thread; how much did both cost?

I have one rooster and seven hens; how many fowls have I in all?

On Susie's eighth birthday she had a party, to which she invited seven children. How many children were there in all?

Write: One and seven are eight.

**Eight minus One.**

Show me eight blocks.

Do as I do. (Teacher puts one under the table.)

How many have you left?

How many did you take away?

Tell me about eight blocks minus one block.

Call your blocks rabbits, and tell me the same story.

Call them pigeons; call them chickens; call them geese swimming in the pond; call them ducks; call them snails; call them grasshoppers.

If there were eight wheels on a car, and one fell off, how many would be left on the car?

If there are eight persons in a car, and one gets out, how many remain in the car?

- Write: Eight minus one are seven.

**Eight minus Seven.**

Take eight blocks; put back seven; how many have you left?

Take eight buttons; put back seven; how many have you left?

Make eight dots on the board; draw a line through seven; how many are left?

Draw eight straight lines on the board; erase seven; how many are left?

If there are eight ink-wells to fill, and I fill seven, how many remain to be filled?

If eight boys are on a sled, and seven fall off, how many boys are left on the sled?

Eight sheep are in a pasture. If seven get out, how many will be left in the pasture?

Eight potatoes grew in a hill ; seven were nice and large, the rest were small ; how many were small ?

Eight turkeys roosted in an open field ; seven on the fence, and the rest on the bars ; how many roosted on the bars ?

Tell me a story about eight minus seven.

Write on your slate : Eight minus seven is one.

### One-Fourth.

You may cut this apple into halves. Cut each half into halves. Into how many pieces have you cut the apple ?

Cut this paper ring into halves. Cut each half into halves. Into how many parts have you divided the ring ?

Divide this circle in the same way. Into how many pieces have you cut the circle ?

Divide this star in the same way. Into how many pieces have you cut the star ?

Divide this square I have on the board into halves, by drawing a line from top to bottom. Divide each half into halves, by drawing a line from left to right. Into how many parts is the square divided ?

Divide this square into halves, by drawing a line from corner to corner. Connect the other two corners. Into how many parts have you divided the square ? Look at the parts, and tell me which is the largest part. Into what kind of parts, then, have you divided the square ?

Into what kind of parts did you divide the first square ? Into how many equal parts ?

Into what kind of parts is the star divided, and how many parts ?

How have you divided the circle ?

How have you divided the paper ring ?

How have you divided the apple ?

Show me one of the four equal parts into which the apple is divided. It is a *fourth* of the apple. Show me another of the four equal parts into which the apple is divided. It is a fourth of the apple. Show me another fourth of the apple; another fourth. Show me one of the four equal parts of the ring. What part of the ring is it? Show me each fourth of the ring. Each fourth of the star. Make a cross in one fourth of the square that is divided into triangles. Make a dot in another fourth. Make a straight line in another fourth. Make the letter *i* in the last fourth. Look at the square that is divided into squares. What part of the large square is each small square?

Divide this triangle into fourths, by drawing lines from the top to the base.

Divide this string into fourths.

Divide this sheet of paper into fourths.

Divide this strip of paper into fourths.

Divide this stick into fourths.

Mark off this line into fourths.

What have you seen cut into fourths?

Into how many pieces was it cut? Into what kind of pieces?

If I cut a pie into four equal pieces, what part of the whole pie is one piece? What part of the pie are two pieces? Four pieces will make what part of the pie? What part are three pieces?

If an orange is cut into four equal pieces, what part of the orange is each piece? What part of the orange are two pieces? are three pieces? are four pieces?

If a peach is divided into four equal pieces, what part of the peach is one piece? are two pieces? are three pieces? are four pieces?

If a pear is divided into four equal pieces, what part of the pear is each piece? are three pieces? are four pieces?

If you divide an apple into fourths, into how many parts do you divide it? Into what kind of parts? If you divide a stick into fourths, into how many parts do you divide it? Into what kind of parts? If you divide four blocks into fourths, into how many groups do you divide them? How many blocks are there in each group? Show me one fourth of four; two fourths of four; three fourths of four; four fourths of four. Divide eight blocks into fourths. Into how many groups have you divided them? Into what kind of groups? Show me one fourth of eight; two fourths of eight; three fourths of eight; four fourths of eight. What is one fourth of eight? What is one fourth of four? What are three fourths of four? two fourths of four? What is half of four?

### Six and Two.

You may each take six blocks; take two more; how many blocks have you? Six blocks and two blocks are how many blocks?

Show me six straight lines on the board; show me two more straight lines; how many straight lines are there in all?

Show me six paper patterns; show me two more; how many are there in all?

Tell me a story for six and two; another; another.

I have six children on this side of the table, and two more on this side of the table. How many children are about the table?

If George writes the word **cup** six times, and then writes it two more times, how many times does he write it in all?

If there are six men on the car-platform, and two more jump on, how many are there on the platform?

Jamie found six eggs in one nest, and two in another; how many eggs did he find in both nests?

Write: Six and two are eight.

**Two and Six.**

Make two dots on the board ; make six more dots ; how many dots have you made ?

Draw two lines ; draw six more lines ; how many lines have you drawn ?

Find two paper knives ; find six more ; how many paper knives have you found ?

If I get two letters in the morning mail, and six in the evening, how many letters do I receive ?

If I have covered two books, and have six more to cover, how many books had I to cover at first ?

One cat has two kittens ; another has six kittens ; how many kittens have both cats ?

I have two pencils nicely sharpened, and six more to sharpen ; how many pencils have I ?

A post is two feet in the ground, and six feet out of the ground ; how many feet are there in the post ?

Write : Two and six are eight.

**Eight minus Two.**

A man had eight cows, but sold two ; how many did he then have ?

There were eight trees in a row, but two died ; how many lived ?

The price of a book was eight cents, but the bookseller took off two cents because the cover was marred ; how much was paid for the book ?

A little girl braids eight yards of matting each day ; when she has braided two yards, how many more yards has she to braid ?

John caught eight fish, but put two back in the water ; how many did he have to carry home ?

We have eight quarts of milk a day; if we use two quarts at breakfast, how many quarts are left?

Ellen picked eight quarts of blueberries, but spilled two quarts; how many quarts did she then have?

Addie can work eight inches of lace in a day; when she has worked two inches, how many more inches can she work during the day?

Write: Eight minus two are six.

### **Eight minus Six.**

Eight little girls are weaving paper mats; six mats will be finished to-day; how many will be left unfinished?

Eddie wrote eight words on his slate; six were right; how many were wrong?

I have eight calls to make; after I have made six calls, how many more calls have I to make?

Eight children were playing store; six thought they would set up a store by themselves; how many were left to run the first store?

Eight girls were playing "Drop the handkerchief"; six were clapped out of the ring; how many were left?

Eight boys were playing "Fox and geese"; six were geese; how many were foxes?

Eight boys were playing ball; six took turns in throwing the ball, and the rest batted the ball; how many batted the ball?

Willie is going to have eight turrets to his block-castle; he has built six; how many more has he to build?

I have a five-cent piece, a two-cent piece, and one cent. If I spend six cents, how many cents shall I have left?

Tell me stories about eight minus six.

Write: Eight minus six are two.

**Eight divided by Two.**

Take, eight blocks. Put your eight blocks into groups of two. How many two-blocks in eight blocks?

Find how many two-dots there are in eight dots.

Here are eight paper shoes; put them in pairs; how many pairs of shoes do you find in the eight shoes?

Here are eight skates; put them in pairs; how many pairs of skates do you find in eight skates?

Put these eight horses into spans of horses; how many spans of horses do you find in eight horses?

Put these mittens into pairs; how many pairs of mittens in eight mittens?

How many couples of buttons in eight buttons?

How many yokes of oxen in eight oxen?

How many pairs of ear-rings in eight ear-rings?

How many pairs of bracelets in eight bracelets?

How many brace of ducks in eight ducks?

A carriage-maker puts two wheels on each baby-carriage; how many carriages will eight wheels supply?

A family uses two pounds of butter a day; how many days will eight pounds last the family?

In eight pints how many quarts?

It requires two knobs for each drawer; on how many drawers will a cabinet-maker put eight knobs?

On how many trunks will a trunk-maker put eight handles?

If there are two pedals to each piano, eight pedals will supply how many pianos?

Eight cents will buy how many two-cent postage-stamps?

If I owe you eight cents, and pay you in two-cent coins, how many must I give you?

Tell me a story about eight divided by two.

Write: There are four twos in eight.



**Four Twos.**

Make two dots on the board; make below them two more dots; below these two other dots; and under all another two dots. How many two-dots have you made? how many dots?

Make lines on the board in the same way. How many two-lines have you drawn? how many lines?

Show me four two-blocks; how many blocks do you show me?

Show me four two-pitchers; how many pitchers have you shown me?

Show me four kinds of blocks, and two of a kind; how many blocks have you shown me?

Show me four kinds of buttons, two of a kind; how many buttons do you show me?

How many hands have four boys?

How many feet have four boys?

How many wings have four birds?

How many legs have four chickens?

How many rockers have four rocking-chairs?

How many leaves have four sheets of paper?

How many handles have four pairs of scissors?

How many legs have four pairs of compasses?

How many blades have four pairs of scissors?

How many cents will four two-cent books cost?

How many cents will four two-cent sticks of taffy cost?

Think of what you can buy for two cents, and tell me what four will cost.

Illustrate on the board the examples I give you, and tell me the answers:—

Ned has two doves; George has four times as many.

If there are two eggs in one nest, how many are there in four nests?

On a baby-carriage there are two wheels; on a car there are four times as many wheels.

Nellie has two dolls; Annie has four times as many dolls.

There are two plants in each of four windows.

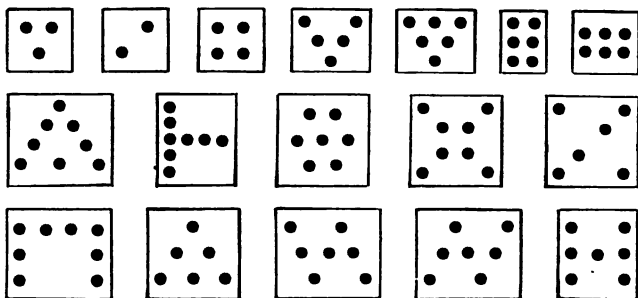
Four knives have each two blades.

Four desks have each two stands.

Write: Four twos are eight.

### Exercise for Review.

Name the number of dots as I point.



Read as I erase dots.

Tell me a story for what I show you with the dots.

Write the right word in place of the blank, in these stories: —

Four and — are six.

Five and two are —.

Two and six are —.

Four and — are seven.

Three and four are —.

Seven minus — are five.

Seven minus — are three.

Eight minus six are —.

Two and — are four.

Four and two are —.

Six and two are —.

Five and — are seven.

Four and three are —.

Three and — are seven.

Seven minus two are —.

Seven minus four are —.

Eight minus two are —.

Two twos are —.

Three and — are six.

Three twos are —.

Two threes are —.

Two — are six.

There are two threes in —.

Four twos are —.

There are four twos in —.

There are three twos in —.

Divide this square into halves.

Divide it into fourths.

Divide this triangle into halves.

Divide it into fourths.

To divide this apple into halves, into how many pieces must I cut it? into what kind of pieces? and what part of the apple is each piece?

Show me one half of two; one half of four; one half of six; one half of eight.

I have cut this apple into halves; you may finish cutting it, so that it will be in fourths. In how many pieces is the apple divided? in what kind of pieces? and what part of the apple is each piece?

Mark off your slate into fourths.

Fold this handkerchief into fourths.

Mark off the board into fourths.

Show me what you think to be a fourth of your pencil; of your finger; of this table; of this line; of this book.

Show me one fourth of four blocks; one fourth of four crayons; one fourth of four pencils.

Divide eight blocks into fourths. Show me one fourth of eight blocks; two fourths of eight blocks; three fourths of eight blocks; four fourths of eight.

How many gills of water in a pint of water?

How many gills in one fourth of a pint of water? in two fourths of a pint? in half a pint?

If one gill of water weighs two ounces, what will a pint of water weigh?

If one gill of peanuts costs two cents, what will a pint of peanuts cost?

If one gill of milk will half fill a cup, how many gills will the cup hold? What part of a pint will the cup hold? How many cupfuls will make a pint?

My watch loses six seconds a day, and my brother's gains two seconds a day; if the watches are together in the morning, how much difference is there the next morning?

It is six miles to Boston; how many miles is it half-way to Boston?

If I walk two miles, and ride six miles, how many miles do I travel?

If I have eight cents, and buy a top for two cents, and a thimble for six cents, how many cents have I left?

If a boy earns two cents a day for Tuesday and Friday, and one cent for each of the other days in the week, how many cents will he earn during the week?

Alice bought a pencil for one cent, a book for one cent, six sheets of paper for one cent, a rubber for two cents, and a sponge for two cents, and had one cent left; how many cents did she have at first?

My wax-plant had two blossoms the first year, twice as many the second year, and the third year as many as it had the first and second years together; how many blossoms did it have the third year?

How many shells have four oysters? four clams? four snails?

If you divide an apple so as to give me three times as much as you have, how will you divide the apple? What part of the apple will you have? What part of the apple shall I have?

If you divide a pie into two pieces, so that one piece will be three times as large as the other, what part of the pie will each piece be?

If you divide an orange equally among four persons, what part of the orange do you give each person?

If you pour a pint of milk into four cups, each of the same size, how much will each cup hold? What part of a pint will each cup hold?

If you pour a quart of berries into four cups, each of the same size, how much will each cup hold? What part of a quart will each cup hold?

This line is four inches long. Show me what you think to be a fourth of the line. How long is a fourth of the line?

This line is eight inches long. Show me what you think to be a fourth of the line. How long is a fourth of the line?

Divide a square into four equal parts, by drawing a line from top to bottom, and a line from left to right; connect the corners, and tell me into how many parts you have divided the square.

We own a horse, two cows, a sheep, a dog, and two cats. How many animals do we own?

Ed has two white hens, two gray hens, two black hens, and enough speckled hens to make eight hens; how many speckled hens has he?

If two quarts of skim-milk cost me nothing, what will eight quarts of skim-milk cost me at the same rate?

If I have four cents, how many whistles at eight cents a whistle can I buy?

If I have six cents, how many whistles at eight cents a whistle can I buy? How many more cents must I have to buy one whistle?

One block, and three blocks, and three blocks, minus seven blocks, are how many blocks?

In looking over my gloves I found eight gloves; one was an odd glove; how many others were odd? How many pairs of gloves had I?

There are four hacks front of the station; each has two horses; how many horses are there front of the station?

Two persons can ride in a herdic; how many persons will four herdics carry?

Jack blacked eight boots before breakfast; how many pairs of boots did he black?

A fish has three fins on each side; how many fins has the fish?

Each fish has two gills; how many gills have three fishes?

One milking-stool has three legs; how many legs have two milking-stools?

In a dish are six apples; how many of us can take out two? how many of us can take three?

Count by twos to eight.

Count backward from eight by twos.

### Five and Three.

Show me five fingers; show me three fingers; how many fingers do you show me?

See if five dots and three dots are eight dots.

Here is a picture of five chickens on the ground and three in the cherry-tree; how many chickens can you see?

Here are five rabbits eating clover, and three eating cabbage; how many rabbits can you see?

Harry has five doves and three kittens; how many pets has he?

If I give you a five-cent coin and a three-cent coin, how many cents do I give you?

How many cents must you pay for a five-cent stamp and a three-cent stamp?

What must I pay for a five-cent ticket and a three-cent ticket?

Tell me stories about five and three.

Write: Five and three are eight.

**Three and Five.**

There are three children on the settee; five more may sit with them; how many children are now on the settee?

Here is a card with three dots in one half and five in the other half; how many dots are on the card?

Here are three spools, which we will call soldiers; five more soldiers march up to them; how many soldiers are now standing here?

Three geese set up a cackle, and five more joined in; how many geese were then cackling?

One bracket has three cups, and another has five cups; how many plants will the two brackets hold?

If a farmer sleeps three hours before midnight, and five hours after midnight, how many hours does he sleep?

Tell me stories about three and five.

Write: Three and five are eight.

**Eight minus Three.**

Show me eight fingers; shut three fingers; how many fingers are open?

Show me eight blocks; put three under the table; how many blocks have you left?

Find eight stars; put three stars behind you; how many stars have you on the table?

Find eight birds; let three fly away; how many have you left?

Call these buttons eight frogs; three have now jumped into the pond; how many frogs remain?

Mary knit eight inches of edging, but the kitten got hold of the spool of thread and unravelled out three inches; how many inches of edging had she then?

In a chandelier of eight lamps, three were lighted; how many were not lighted?

There were eight tassels on my scrap-bag, but three have fallen off; how many are now on the scrap-bag?

Tell me stories about eight minus three.

Write: Eight minus three are five.

### **Eight minus Five.**

Draw eight lines on the board, and cross five lines; how many lines are not crossed?

Make eight dots straight up and down on the board; draw a line through five; how many have no line drawn through them?

Make eight dots in a slanting line, and erase five; how many remain?

Make eight crosses on the board; cover up five; how many can you see?

Write eight *i*'s; join five of them; how many are not joined?

I had eight pencils to sharpen; I have sharpened five; how many remain to be sharpened?

I have eight fans to paint; after I have painted five, how many will remain to be painted?

There are eight weeks in two months; if I have two months' vacation, and am busy five weeks, how many weeks have I to rest?

If I have two pints of milk, and use one pint and a gill, how many gills shall I then have?

Daisy has eight clover blossoms in her hand; five are red and the rest are white; how many are white?

Eight pansies minus five pansies are how many pansies?

Tell me stories about eight minus five.

Write: Eight minus five are three.



**Exercise for Review.**

One robin, two swallows, three blue-birds, and two jays, are how many birds?

Two hens, three turkeys, and three ducks, are how many fowls?

Three horses, a dog, a sheep, and three cows, are how many animals?

Four roses and three lilies are how many flowers?

Five elms and three maples are how many trees?

Two rose-bushes, a lilac-bush, a syringa, and three flowering-almonds, are how many shrubs?

My watch is five seconds slow; if it loses three more seconds, how slow will it be?

I have three cents; how many more cents must I have to have eight cents? How many cents do I need to have seven cents?

A hen had eight chickens, but the cat caught two, and one got drowned; how many had she then?

I had a two-cent piece, one cent, and a five-cent piece; how many cents had I after spending five cents?

One week is what part of a month?

We have a new moon every month; how many new moons will there be in seven months?

We have a full moon every month; how many full moons will there be in eight months?

How many dozen buttons, at four cents a dozen, can I buy for seven cents? and how many cents shall I have left?

Two horses have how many feet?

Four cows have how many horns?

Four baskets have how many handles, if each basket has two handles?

In making a picture-book I put two pictures on a page ; how many pictures can I put on two leaves ?

What four equal numbers make eight ?

What two equal numbers, and two more, make eight ?

I have seven cards, and Annie has five ; how many must I give Annie so that each of us may have the same number ?

How many whole dollars are there in six half-dollars ?

### Four and Four.

You have four fingers on one hand, without your thumb, and four on the other ; how many fingers have you without your thumbs ?

Here are four cups and four saucers ; how many dishes are there ?

If Jennie wipes four knives and four forks, how many things does she wipe ?

This card has four dots on one half, and four dots on the other half ; how many dots has it ?

On the table are four bottles and four glass stopples ; how many things are on the table ?

In the jeweller's window are four watches and four watch-cases ; how many things are there in the window ?

In the lower sash of the window are four panes of glass, and in the upper sash four panes ; how many panes are in the window ?

Show me that four splints and four splints are eight splints ; that four spools and four spools are eight spools ; that four cents and four cents are eight cents ; that four i's on one line, and four i's on another line, are eight i's ; that four boxes and four box-covers are eight things.

It is four miles to the foot of Mt. Prospect ; how many miles is it to the foot of Mt. Prospect and back ?

Four little girls and four dolls made me a visit one day;  
how many made me a visit?

Tell me stories about four and four.

Write: Four and four are eight.

### Eight minus Four.

I have eight blocks; I will put four back in the pile;  
how many blocks have I now?

Nettie may take eight blocks, and give four to John;  
how many blocks has Nettie?

Mary may find a card with eight dots on it; cover four;  
how many dots can you see?

Make eight dots; erase four; how many remain?

Here are eight chickens in the yard; four run to me for  
some corn; how many are in the yard now?

The cook makes eight loaves of bread a day; if we eat  
two in the morning and two at noon, how many are left  
for supper?

There are eight wheels on a steam-car; if four are taken  
off, how many are on the car?

There are eight desks in a row; if four have no books in  
them, how many have books? If four children sit in the  
row, there is room for how many more children?

If I have eight yards of ribbon, and use four, how many  
yards have I left?

A wooden water-pail holds eight quarts; if it has four  
quarts in it, how many more quarts will it hold?

I bought four quarts of berries this morning, but have  
used four pints of the berries; how many pints have I left?

I have eight quarters of a dollar; if I spend four quarters,  
how many quarters have I to spend? how many dollars?

I had eight halves of a dollar; I used four halves; how  
many halves have I now to use? how many dollars?

In a quart pail were eight gills of milk; we used four gills for breakfast; how many gills were left? how many pints? what part of a quart?

This strip of paper is eight inches long; if I cut off four inches, how long will it be?

Eight white clouds were floating in the sky a moment ago, but four have floated out of sight; how many can I see?

Write: Eight minus four are four.

### Eight divided by Four.

Here are eight pencils; give four to as many children as you can.

Try it with eight buttons; to how many children can you give four buttons, if you have eight buttons?

Take eight cents; put four in a box; how many boxes does it take?

Take eight crayons, and put four at a board; at how many boards can you put four crayons, if you have eight?

A chair-maker has turned out eight chair-legs; how many chairs will they supply?

There are eight stove-legs on the floor in a tin-shop; how many stoves can the eight legs supply?

There are eight horses in the stable; how many four-horse coaches will the eight horses supply?

I have eight cents; how many four-cent sticks of twist can I buy?

A gardener had eight trees to set out; he put four in a row; how many rows did he set out?

There are eight gills of vinegar in a jug; how many pints of vinegar are in the jug?

Write: There are four twos in eight.

**Two Fours.**

Take four blocks; take another four blocks; how many four-blocks have you? how many blocks?

Here are four spools, and here are four spools; how many four-spools? how many spools?

Show me two boxes with four cents in each box; how many cents do you show me?

How many feet have two dogs?

How many paws have two kittens?

How many wheels have two four-wheeled carriages?

How many gills in two pints?

How many inches in two strips of card each four inches long?

How many fourths in two whole ones?

If you have four miles to ride, and I have twice as far, how far have I to ride?

If Lizzie must copy four words, and Victor twice as many words, how many words must Victor copy?

Tell me stories about two fours.

Write: Two fours are eight.

**Exercise for Review.**

If it takes six yards of carpeting for a hall that is three yards long, how wide is the hall?

Three quarts and a half of berries are how many pints of berries?

Three pounds and a half of potatoes, at two cents a pound, cost how much?

In two months how many weeks?

In two months how many moons?

Four cakes cost eight cents; what will two cakes cost?

How many bananas, at five cents each, can you buy for eight cents, and how many cents will you have toward buying another banana? How many bananas at the same price could you buy for seven cents, and how many cents would you have toward buying another?

How many strokes does the town clock give from half-past two to half-past four?

Letters are now carried for three cents; next year they will be carried for two cents; how much money will then be saved in sending six letters?

Four two-horse sleds have just passed; how many horses did it take to draw them? How many drivers, if there was a driver for each sled? If each driver had charge of two sleds, how many drivers would four sleds require?

How many runners had the four sleds?

How many stakes had each sled, if there were four stakes on a side? How many runners has a double-runner?

If a man lays two feet of wall in a day, how long will it take him to lay eight feet of wall? If two men lay four feet of wall in a day, how long will it take them to lay eight feet?

Name two equal numbers that make eight.

Name two equal numbers and two that make eight.

Name eight equal numbers that make eight.

A little iron rake had eight teeth, but four got broken out; how many did the rake then have?

How many handles have four plows?

A pitchfork has four tines; how many tines have two such pitchforks?

A man could get only a half cord of wood each time; how many times would he need to go to get four cords?

How many shafts have three wagons?

An ox has two toes on each foot; how many toes has he altogether?

An ox wears two shoes on each foot; how many shoes does he wear?

A blacksmith has eight horseshoes; how many horses can he shoe all round?

There are two heads to a barrel; how many heads have four barrels, if one barrel-head is gone?

### **Eight minus Eight.**

There are eight children about the table; eight children may sit on the platform; how many children are now about the table?

Here are eight spoons; you may put eight spoons in the box; how many spoons remain out of the box?

There are eight buttons on your boot; if eight buttons come off of your boot, how many will there be on the boot?

There are eight buttons on your jacket; if mamma cuts off eight buttons, how many buttons will there be on your jacket?

Johnnie filled eight baskets with leaves, but Albert tipped over eight baskets and scattered the leaves; how many were then filled with leaves?

Willie's uncle gave him eight dollars; Willie put eight dollars in the bank; how many dollars had he beside?

In a show-window there were eight doll-cradles, but eight of them were sold; how many were left to sell?

There are eight things in my pencil-tray; if I take eight things out of the tray, how many things remain in the tray?

Eddie had eight cookies; when he had eaten eight cookies, how many cookies had he to eat?

Tell me stories about eight minus eight.

Write: Eight minus eight are none.

**Eight divided by One.**

Take eight cups; put each in a saucer; how many saucers does it take for the eight cups?

Take eight spoons; put each in a cup; how many cups does it take for the eight spoons?

Take eight pencils; give one to each of as many children as you can; to how many children can you give one pencil each, if you have eight pencils?

To how many children can the salesman sell eight slates, if he sells one to each child?

Eight hooks will be enough for how many pictures, if one hook is enough for one picture?

Eight cents will buy how many one-cent books? how many one-cent stamps? how many one-cent pencils?

Eight horses will take how many stalls, if one horse takes one stall?

Tell me stories about eight divided by one.

Write: There are eight ones in eight.

**Eight Ones.**

How many handles have eight knives?

How many seats have eight chairs?

How many tops have eight tables?

How many trunks have eight elephants?

Eight birds have how many bills?

Eight windows have how many shades?

Eight rooms have how many ceilings?

Eight mirrors have how many frames?

Eight men were going into the woods to work; the farmer's wife put up a lunch for each; how many lunches did she put up?

How many stamps will be required for eight letters, if each letter requires one stamp?



How many times does the girl go to the market, if she goes once a day for eight days?

If we eat a pound of oatmeal each day, how many pounds shall we eat in eight days?

Tell me stories for eight ones.

Write: Eight ones are eight.

### **Eight divided by Eight.**

How many ones can you find in eight?

How many twos can you find in eight?

How many fours can you find in eight?

How many eights can you find in eight?

If you had eight fish-hooks, to how many boys could you sell a fish-hook?

How many eight-cent watches can you buy for eight cents?

A gardener setting out trees, sets eight in a row; how many rows can he make from eight trees?

A large oven will hold eight pies; how many times must the cook bake to bake eight pies?

How many eight-cent loaves of bread can you buy for eight cents?

If crackers are eight cents a dozen, how many dozen crackers can be bought for eight cents?

Tell me stories for eight divided by eight.

Write: There is one eight in eight.

### **Halves of Eight.**

Take eight blocks; divide them into halves.

Show me one-half of eight blocks; how many blocks are one-half of eight blocks?

Find one-half of eight baskets; how many baskets are one-half of eight baskets?

Show me one-half of eight buttons; how many buttons are a half of eight buttons?

How many cards are one-half of eight cards?

How many newspapers are one-half of eight newspapers?

How many apples are one-half of eight apples?

I have eight kittens; if I give away half of them, how many kittens shall I give away?

I spent four cents this morning, which is half the money I had; how much money had I?

Johnnie, who is four years old, is half as old as George; how old is George?

There are eight gills in a quart; how many gills in half a quart?

Rice is eight cents a pound; what will half a pound of rice cost?

Four miles is half the distance home; what is the distance home?

When four of the lamps in a chandelier are lighted, half of the lamps are lighted; how many lamps has the chandelier?

Four is one-half what number?

Eight is twice what number?

Show me two halves of eight blocks.

Which had you rather have, eight oranges or two halves of eight oranges?

Which is the more jelly, eight cups of jelly or two halves of eight cups of jelly?

A man who had eight horses, sold half his horses; how many horses did he sell?

When the hour-hand is one-half the distance from twelve to eight, to what figure does it point?

I had eight letters to write; I have written four; what part of eight have I written?

Write: One-half of eight is four.

**Fourths of Eight.**

Put eight blocks into four equal groups. How many in each group?

What part of eight is each group?

How many blocks in a fourth of eight blocks? Show me a fourth of eight buttons; how many buttons do you show me?

Arrange eight children in rows so that a fourth of them will be in each row.

Put eight books in piles so that a fourth of them will be in each pile.

Arrange eight dots in rows so that a fourth of eight dots will be in each row.

Put eight shells in boxes so that a fourth of them will be in each box; how many shells in each box?

I divided eight picture-books equally among four children; how many books did I give to each child? what part of eight did I give to each?

A boy who earned eight dollars a week, saved a fourth of it each week; how much did he save?

A little girl who had eight cents, spent a fourth of her money for a pencil; how much did the pencil cost?

Irene had eight weeks' vacation; she spent a fourth of her vacation at the beach; how many weeks did she stay at the beach?

How many weeks in a fourth of two months?

How many gills in a fourth of a quart?

I cut an apple into eight pieces; if I gave Alice two pieces, what part of the whole number of pieces did I give her?

There were eight roses on a bush; two fell off; what part of the whole number of roses fell off?

Eight boys were drilling in a military company; two were ordered out of the line for not paying attention; what part of the whole number was ordered out?

It is eight miles to a certain lake; if I walk two miles, what part of the distance do I walk?

A tin-peddler travels eight miles a day; what part of the distance has he gone when he has travelled two miles?

In a figure which Willie designed with splints, there were eight triangles; how many triangles were there in a fourth of the design?

Tell me what part of eight dots I make on the board. Tell me what part of eight cents I show you. Tell me what part of eight nuts I put in the drawer; how many nuts?

A boy earned eight dollars in four weeks; how many dollars did he earn a week?

Annie can write eight stories in four minutes; how many stories does she write a minute?

Four pairs of boots cost eight dollars; how many dollars a pair do they cost?

Four erasers cost eight cents; what does one eraser cost?

Four pairs of silk mittens cost eight dollars; what is the price of a pair?

What is one-fourth of eight?

Two is one-fourth of what number?

One-fourth of eight is how many?

Show me two-fourths of eight splints.

How many splints are two-fourths of eight splints?

Show me three-fourths of eight splints.

How many splints are three-fourths of eight splints?

Show me four-fourths of eight splints.

Which is more, eight splints or four-fourths of eight splints?

If the cook uses one-fourth of eight eggs each day, how many fourths of eight eggs will she use in four days? how many eggs?

If each person eats one-fourth of eight eggs for breakfast, how many eggs do four persons eat?

Eight minus one-fourth of eight are how many?

Eight minus two-fourths of eight are how many?

Eight minus one-half of eight are how many?

Write: One-fourth of eight is two.

### § 26. COMPARISON OF EIGHT WITH NUMBERS KNOWN.

At Roy's house are eight kittens and eight puppies; how many more kittens are there than puppies?

At the Zoölogical Gardens there were eight bears and eight seals; how many more bears than seals were there?

Find how many more there are in eight than in seven.

If there were eight boats going down the river, and seven going up the river, how many more boats were going down the river?

If there were eight honey-bees, and only seven honey-suckle blossoms, would there be a blossom for each bee? how many bees would have to fly to another flower?

Harry has eight figs, Louise seven figs; how many more figs has Harry than Louise?

Find how many more there are in eight than in six.

How many more legs have two oxen than three boys?

How many more legs have two chairs than two three-legged stools?

I have four two-cent coins; Mary has two three-cent coins; how much more money have I than Mary?

Four two-horse sleds will require how many more horses than six single-horse sleds?

Eight boys are raking hay; six men are mowing; how many more boys than men are there in the hay-field?

Find how many more there are in eight than in five.

I have eight daisies and five violets; how many more daisies than violets have I?

Eight boys were playing polo; five were looking on; how many more were playing than looking on?

There were eight mice in a basket, and five kittens all ready to eat them; how many more mice than kittens were there?

I have two three-cent pieces and two cents in my purse, and a five-cent piece in my hand; how much more have I in my purse than in my hand?

Find how many more there are in eight than in four.

How many more wheels has a steam-car than a carriage?

Two chairs have how many more legs than one chair?

Eight horses have how many more heads than four horses?

Two squares have how many more sides than one square?

Find how many more there are in eight than in three.

This room is eight feet high; this little girl is only three feet high; how much higher is the room than Blanche?

A cat, a rooster, and a donkey agreed to travel together; they overtook eight robbers; how many more were in one company than in the other?

I skated three times across the pond; Florence skated eight times across the pond; how many more times did Florence skate across the pond than I?

Two men were selling balloons; one had sold all but eight; the other had sold all but three; how many more had one to sell than the other?

Find how many more there are in eight than in two.

One dog had eight bones thrown out to him; another had only two bones; how many more bones did one have than the other?

How many more gills are there in a quart than in a tea-cup, if the tea-cup holds two gills?

How many more shoes does an ox wear than you ?

Find how many more there are in eight than in one.

A cabinet-maker made eight tables with drawers, and one without ; how many more did he make with drawers than without ?

There are two card-baskets on the table ; one has eight cards in it, the other has only one card ; how many more cards has one basket than the other ?

In one fruit-dish there are eight clusters of grapes ; in another one cluster ; how many more clusters are there in one dish than in the other ?

Eight is how many more than one ?

One is how many less than eight ?

Eight is how many more than seven ?

Seven is how many less than eight ?

Eight is how many more than two ?

Two is how many less than eight ?

Eight is how many more than six ?

Six is how many less than eight ?

Eight is how many more than three ?

Three is how many less than eight ?

Eight is how many more than five ?

Five is how many less than eight ?

Eight is how many more than four ?

Four is how many less than eight ?

Charley has eight rabbits ; Bennie has half as many ; how many more rabbits has Charley than Bennie ?

In one hand I have four two-cent pieces ; in the other hand I have only half as many two-cent pieces ; how many more cents are there in one hand than in the other ?

There were eight of us when we were children at home ; there were half as many cousins in the house opposite ; how many more of us were there than cousins in the house opposite ?

This line is eight inches long; this short line is only one-fourth as long; how much longer is one line than the other?

Eight children are playing "Ring around Rosy"; one-fourth of that number are playing ball; how many more are playing in the ring?

One and how many are eight?

Seven and how many are eight?

Two and how many are eight?

Six and how many are eight?

Three and how many are eight?

Five and how many are eight?

Four and how many are eight?

Eight and how many are eight?

Eight minus one are how many?

Eight minus seven are how many?

Eight minus two are how many?

Eight minus six are how many?

Eight minus three are how many?

Eight minus five are how many?

Eight minus four are how many?

How many fours in eight?

How many twos in eight?

How many ones in eight?

One-half of eight is how many?

One-fourth of eight is how many?

One-eighth of eight is how many?

Four blocks are what part of eight blocks?

Two blocks are what part of eight blocks?

One is what part of eight?



## CHAPTER VIII.

### THE NUMBER NINE.

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#### § 27. NINE AS A WHOLE.

Take eight blocks; put one more block with them. Show me just as many paper disks; as many splints; as many shells; as many pebbles; as many paper patterns; as many dots on the board; as many lines on the board; as many *i*'s on the board. You have shown me *nine i*'s. How many lines have you shown me? how many dots? how many splints? how many blocks? Find nine bits of crayon. Mary, collect nine pencils from the desks. Harry, pick out nine cents. Annie, put nine cups in a row. Georgie, find nine saucers to go with these cups. Alice, find a card with nine dots on it. Fannie, pick out nine paper spoons.

Who thinks there are as many as nine desks in two rows of desks? that there are as many as nine rounds on the back of the settee? that there are as many as nine figures on the clock?

Mention the things in this room of which there are at least nine.

Name nine different things you see in this room. Name again.

Arrange nine dots on the board in all the ways you can.

Mention things of which you would see nine on the street; in your homes.

Name nine different things you saw on your way to school this morning, and take a block for each one.

Each take nine splints; see how many designs can be made using the nine splints each time.

### § 28. DISCOVERIES IN NINE.

Take nine blocks. Each show me two numbers that together make nine. Tell me what you have found. Find again; tell me what you have found.

Each take a number out of nine. Tell me what you have taken away, and what remains. Try it again, and tell me what you have.

Separate nine into equal groups, and tell me what you have.

See if you can separate nine into halves; into fourths.

Find what you must put with eight to make nine; with seven; with six; with five; with four; with three; with two; with one; with none.

What number taken from nine will leave one? will leave two? will leave three? four? five? six? seven? eight?

Copy the word **nine** on your slates.

### § 29. FACTS IN NINE.

#### **Eight and One.**

Illustrate the story I tell you with blocks. Eight chickens were eating out of a dish, and one more chicken came to eat with them; how many chickens were then eating out of the dish?

Illustrate again. There were eight little mice in a nest, and the mother mouse; how many were there in all?

There were eight swallows' nests in a sand-bank, and one more nest was built. How many nests were then in the sand-bank?

Eight children were playing tag, and one more child joined them; how many were then playing tag?

Eight morning-glories were blossomed early this morning, and one more morning-glory blossomed out before I came to school; how many blossoms were then on the vine?

I paid eight cents for a book, and one cent for a pencil; how much did I pay for both?

There were eight pictures in my scrap-book, and I have just put one more picture in it; how many pictures are now in my scrap-book?

I have eight pictures in my room; how many shall I have if I buy one picture more?

Eddie has eight story books; how many will he have if another story book is given him?

You have been to school eight months this year; if you go another month, how many months will you have been to school?

Tell me a story about eight quarts of blackberries and one quart of blackberries; eight currant bushes and one currant bush; eight pounds of butter and one pound of butter; eight pans of milk and one pan of milk; eight rows of trees and one row of trees; eight robins and one bluebird; eight roses and one tulip; eight cows and one horse; eight hand-rakes and one horse-rake.

Write: Eight and one are nine.

### One and Eight.

Show me one block; show me eight blocks more; how many blocks have you shown me?

Tell me a story for what you have shown me.

One sunbeam played through a hole in the roof of the barn, and soon eight more sunbeams came too; how many sunbeams then lighted the barn?

At one place under the eaves was a swallow's nest, and at another place there were eight nests; how many nests were there in all?

Willie found one egg in one nest, and eight eggs in another nest; how many eggs did he find?

If, in the end of a house there is one window under the eaves, and eight more windows below it, how many windows in all?

I have one nut in my hand; if you give me eight nuts more, how many nuts shall I have?

The cook, in making an apple pudding, put one apple in the middle of the dish, and eight apples around it; how many apples did she put in the dish?

One little boy wished to play with the blocks, and then eight more boys wanted to play with them; how many boys wanted to play with the blocks?

Harry's mother told him he might go nutting if he could get any boys to go with him. He found eight boys who could go; how many boys were there in all to go nutting?

One sheep jumped over the fence, and so eight more sheep jumped over the fence; how many sheep jumped over the fence?

Write: One and eight are nine.

### Nine minus One.

Stand nine spools in a row. Call them soldiers. One soldier got out of line; how many soldiers were left in line?

Call them lamp-posts. One lamp-post had no lamp on it; how many lamp-posts had lamps?

Call them ninepins. One ninepin tumbled over; how many ninepins were left standing?

Call them chimneys a mason had to build. He built one chimney; how many more chimneys had he to build?

Call them lamp-chimneys. One lamp-chimney got broken; how many lamp-chimneys were left?

Call them gate-posts. One gate-post fell over; how many gate-posts remained standing?

Call them pencils I must sharpen. If I sharpen one pencil, how many more pencils remain to be sharpened?

Call them pumps which a pump-maker had to sell. He sold one pump; how many pumps had he left?

Call them weather-vanes. One weather-vane blew over; how many weather-vanes were there then?

### Nine minus Eight.

Make nine dots on the board. Draw a line through eight of them; how many more dots are there?

Draw nine straight up-and-down lines. Erase eight; how many are left?

Draw nine right-and-left lines. Cover eight of the lines with your hand; how many lines do you see now?

Show me nine blocks minus eight blocks.

There were nine apples in the fruit-dish this morning, but eight have been eaten; how many are left?

Nine doves were in the walk picking up crumbs. When I opened the door, eight of them flew away; how many were then in the walk?

A hen had nine chickens, but they went into the wet grass and eight died; how many chickens were there then?

There were nine hacks at the station. Eight of them had passengers; how many had none?

There were nine pigs in the pen, eight got out of the pen, how many remained in the pen?

I have nine books to cover. When I have covered eight, how many more will there be to cover?

If there are nine pins on the cushion, and I use eight, how many will there be on the cushion?

Who will tell me a story for nine minus eight? Another story? another? another?

Write: Nine minus eight is one.

### Exercise for Review.

Show me four blocks; six blocks; five blocks; seven blocks; nine blocks; eight blocks.

Tell the number I show you. Again; again.

Find how many twos in four. Give me a story for four divided by two.

Find how many twos in six. Give me a story for six divided by two.

Find how many twos in eight. Give me a story for eight divided by two.

Show me eight, in twos. How many twos?

Tell me a story for four twos are eight.

Show me six, in twos. How many twos?

Give me a story for three twos are six.

Show me six, in threes. How many threes?

Give me a story for two threes are six.

Harry had six arrows for his bow, but has shot two; how many has he left? If he had shot four, how many would have remained?

If he has four arrows, and makes two more, how many arrows will he have?

If he loses all but two of these arrows, how many will he lose? If then he buys four more, how many will he have?

Six pencils minus four pencils are how many pencils?

Six pencils minus two pencils are how many pencils?

Four pencils and two pencils are how many pencils?

Two pencils and four pencils are how many pencils?

Write on the board: Six minus four are two.

Write: Six minus two are four.

Write: Four and two are six.

Write: Two and four are six.

If John has for a team of horses, the kitten, a cloth elephant, two wooden horses, and a pair of boots, how many horses has he?

If there are two kittens on the table, one kitten in a chair, and three kittens on the floor, how many kittens are there in all?

There were seven little boys dressed as soldiers; two had flags; how many did not have flags?

Jamie had seven rabbits, but gave two away; how many had he then?

Nellie's writing-book cost seven cents. She had only five cents; how many more cents did she need to pay for it?

If she had only two cents, how many more cents would she need?

A five-cent piece and a two-cent piece are how many cents?

Write on the board: Five and two are seven.

Write: Two and five are seven.

Write: Seven minus two are five.

Write: Seven minus five are two.

There were four ducks in the pond, and three on the edge of the pond; how many were there in all?

There were three mice in the pantry, and four more came to join the fun; how many mice were then in the pantry?

My lamp will burn seven hours. After it has burned three hours, how many more hours will it burn?

After it has burned four hours, how long will it burn?

There were seven yachts in the harbor; three were moored; how many were sailing about?

There were seven roses on my rose-bush, but I cut off four this morning; how many were left on the bush?

Four and how many are seven?

Three and how many are seven?

Seven minus three are how many?

Seven minus four are how many?

Show me one-half of four. One-half of six. One-half of eight.

Show me one-fourth of four. One-fourth of eight.

It is four miles from Boston to Mount Auburn; how far is it half-way to Mount Auburn?

I teach six hours a day; how many hours do I teach in half a day?

If I cut a pie into eight equal pieces, how many pieces will there be in half the pie?

If I cut an apple into four equal pieces, what part of the apple is each piece?

If I have four apples, and give you one-fourth of the number I have, how many apples shall I give you?

If I give you two-fourths, how many shall I give you? If I give you three-fourths? If I give you four-fourths?

I had eight cents in my pocket, but I spent a fourth of my money; how much money have I left?

Ed had eight hens, but sold a fourth of the number he had; how many had he left?

Etta found eight eggs, but she broke a fourth of them; she then found half as many more as she had left; how many had she then?

I had eight blossoms on my geranium, but a fourth of them fell to pieces, and I cut off half of what remained; how many blossoms were left on the plant?



Alfred had four nuts, and gave me two-fourths of what he had ; how many nuts did he give me ?

James had four apples, and gave his brother two-fourths of what he had ; how many apples did he give his brother ?

Charley had four fish-hooks, and traded away two-fourths of them ; how many did he trade away ?

Fred caught four fish, but three-fourths of them were too small to eat, so he put them back in the water ; how many did he put back ?

A fisherman had four boats ; three-fourths of the number he had leaked ; how many leaked ?

In a class there were eight children ; one-fourth of the number was absent ; how many fourths were at school ?

If two-fourths had been absent, how many children would have been absent ?

If three-fourths of the children were at school, how many were at school ?

If you have five buttons on your boot, and mamma sews three more on your boot, how many buttons will there be on your boot ?

If there are five little girls on one side of the table, and three boys on the opposite side of the table, how many children are there about the table ?

Mary had four two-cents pieces, and spent three cents ; how many cents had she left ?

If she had spent five cents, how many cents would she have had remaining ?

In the barn are four spans of horses. If a span of horses and a single horse are taken out of the barn, how many horses will remain in the barn ?

If two spans and a single horse are taken out, how many horses will be left in the barn ?

I have enough berries to fill four two-quart measures. If I sell three quarts, how many quarts shall I have left ?

If I sell five quarts, how many quarts shall I have left?

Two chairs were stored away in the attic; one chair had lost two legs, and the other chair one leg; how many legs did both chairs have together?

If one chair had lost three legs, and the other chair two legs, how many legs would the two chairs have?

Three oranges and how many oranges are eight oranges?

Five oranges and how many oranges are eight oranges?

Eight oranges minus how many oranges are five oranges?

Eight oranges minus how many oranges are three oranges?

Draw a line an inch long on the board. Measure off on the edge of the table what you think to be an inch.

Divide this strip of paper into inches.

Mark off this line into inches.

Tell me how long you think the side of this square is; the side of this triangle; the longer side of this oblong; the shorter side of the oblong.

Divide this figure on the board into inch squares.

How many inches high is this gill measure? How many inches across the bottom?

How many times must you fill the gill measure to dip out a pint of water?

If it takes a gill of molasses for one pot of baked beans, how many pints of molasses will be required for four pots of baked beans?

If it takes a pint of milk for a custard, how many gills of milk does it take?

If it takes a pint of berries for a pudding, how many times must Harry fill his gill cup to have enough berries for the pudding?

A pint of ice cream will furnish how many persons a gill each?

We have two pints of milk every morning. How many gills do we have? How many quarts of milk do we have?

A coffee-cup holds two gills; how many cupfulls will it take to fill a pint measure? How many will it take to fill two pint measures? How many will it take to fill a quart measure?

I picked eight pints of cranberries; how many quarts of cranberries did I pick?

There are eight pints of cream in the cream-pail; how many quarts of cream are in the pail?

Large milk-cans hold eight quarts of milk. If the milk-can is half full, how many quarts are in the can? How many pints?

If I had eight pans of milk to skim, and I have skimmed half of them, how many have I skimmed?

The snow is two feet deep now, which is half as deep as it has been; how deep has it been?

There are four links in half an inch of my watch-chain; how many links are there in an inch of my watch-chain?

There are eight apples in the fruit-dish; to how many boys can I give two apples apiece?

### Seven and Two.

Here are seven dolls. Put two more dolls with them; how many dolls are there now?

You may tell me about seven blocks and two blocks; seven dots on one half of the card and two on the other half; seven splints and two splints; seven straight lines and two curved lines; seven horses and a span of horses; seven butterflies and two butterflies; seven girls and two boys; seven chimneys and two chimneys; seven robins and two bobolinks; seven cows and a pair of oxen.

Fannie found seven ripe strawberries in the morning, and two in the afternoon; how many ripe strawberries did she find in all?

Near a thistle are seven yellow butterflies. If two more yellow butterflies come, how many yellow butterflies will there be?

Seven loads of hay passed my house yesterday and two to-day. How many loads of hay passed yesterday, and to-day?

There was a shower every day last week, and there have been two showers this week. How many showers have we had within two weeks?

I stayed a week and two days at the beach last summer. How many days did I stay at the beach?

I can see from my window two beech-trees, five maple-trees, and two elms. How many trees can I see?

There are four ducks in the pond, three on the bank, and two more coming. How many ducks are there in all?

I have two nuts, Mary has twice as many and one more, and Jennie has two. How many nuts have we together?

If Frank has one cent, Harry six times as many cents, and Ellen two cents, how many cents have the three together?

If John has five cents and spends three cents, then earns five cents, and I give him two cents, how many cents will he have?

Write: Seven and two are nine.

### Two and Seven.

Take nine blocks. Separate them as I do mine. How many here? (Two.) How many here? (Seven.) Show me two of your blocks. Show me seven of your blocks. How many blocks are your two blocks and your seven blocks?

Here are two lines on the board; draw enough more to make nine lines. How many did you draw?

Here are two dots. Make enough more dots to have nine dots. How many did you make?

In a basket of fruit were two pears and seven apples. How many pears and apples were there together?

The tickets to a concert are a half-dollar each. If I take two tickets, and the rest of the family take seven tickets, how many half-dollars do we pay for tickets to the concert? How many dollars?

I have two quarters of a dollar in my purse and enough change to make seven quarters more. How much money have I in my purse?

One side of this right angle is two inches long, and the other side is seven inches long. How long are both sides of the angle?

Two honey-bees were on a morning-glory, and seven others were flying near. How many honey-bees were there in all?

There are two black spools on this string, and seven white spools. How many spools are on the string?

Edward has two cents. Mary has three times as many cents and one cent beside. How many cents have they together?

Charlie has a two-cent piece of money. I have two three-cent pieces of money and one cent beside. How much money have we together?

You may tell me a story about two and seven.

Write: Two and seven are nine.

### Nine minus Two.

I have nine dots on the board; I will cover two. How many can you see now?

Here are nine tin plates; I will bake pies on two of the plates. How many plates will be left in the pile?

Here are nine paper wheels; play they are water-wheels and that you have set two of them in the brook. How many will you have left?

Pick out nine birds from the box of patterns; play two flew away. How many are left?

Find nine horses. Hitch a span to a cart. How many horses have you beside the span?

Nine tops were spinning at the same time. Two tumbled over. How many were then spinning?

There were nine chickens in a brood. Two were white and the rest were brown. How many were brown?

There were nine panes of glass in the lower sash of a window. One pane was broken and another cracked. How many were whole?

I had nine postal cards this morning, but I have used two. How many have I left?

Nine boys were playing ball, but two left the game. How many remained playing.

There were nine things in my pencil tray; I took out a pencil and an eraser. How many things remained in the tray?

Each think of a story for nine minus two. Who has a story ready? Tell me your story.

Write: Nine minus two are seven.

### Nine minus Seven.

Show me nine cubical blocks; put back seven. How many remain?

Show me nine rectangular blocks; put back seven. How many remain?

Show me nine lines on the board; erase seven. How many lines remain?

Here are nine soldier caps. Seven soldiers have taken their caps. How many caps are left?

There are nine cars on a passenger train; one car was a smoking car, two cars were sleepers, and four cars were ordinary passenger cars; the rest were baggage cars. How many were baggage cars?

There were nine books on a shelf; four had red backs, three had green backs, and the rest were brown. How many were brown?

Nine bottles stood on a shelf; two had glycerine in them, five had medicine, and the rest were empty. How many were empty?

There are nine more days in this month; how many days will there be after a week has passed?

A boy had nine cents; he spent two cents each day for three days and one cent the next day. How many cents had he then?

If he had spent three cents each day for two days and one cent beside, how many cents would have remained?

If he had spent two cents each day for two days and three the next day, how many cents would have remained?

If he had spent a cent each day for five days and two beside, how many cents would have remained?

Tell me about nine minus seven.

Write: Nine minus seven are two.

### Exercise for Review.

Five and two and how many are nine?

Four and three and how many are nine?

One and six and how many are nine?

Four and four and how many are nine?

Five and three and how many are nine?

Two and six and how many are nine?

One and three and two and two and how many are nine?

Two and three and two and how many are nine?

There were nine apples in a dish; two were sweet and the rest were sour. How many were sour?

Charlie had nine pencils; three were too short to use, and four were not sharpened; how many were ready for use?

Nine minus what number is eight?

Nine minus what number is seven?

Nine minus what number is one?

Nine minus what number is two?

Tell me two numbers you may take from nine and have two remain.

What two equal numbers make eight?

What two equal numbers make six?

What two equal numbers make four?

What two numbers, one of which is one more than the other, make five?

What two numbers, one of which is one more than the other, make three?

What two numbers, one of which is one more than the other, make seven?

What two numbers, one of which is two more than the other, make eight?

How many pairs of gloves have I if I have eight single gloves?

I have two cents; James has twice as many. How much money have we together?

Nellie has two dolls; Ida has four times as many. How many more dolls has Ida than Nellie?

Old Dolly can travel two miles in half an hour; the colt can travel twice as fast. How far will the colt travel in an hour?



Apples are selling, two for a cent, but if you buy a single apple you must pay a cent. How much will nine apples cost?

Lemons are selling, two for three cents. How many lemons can you buy for six cents?

If an orange were divided equally between two boys, what part of the orange would each boy have?

If two oranges were divided equally between two boys, what part of the two oranges would each boy have? How many oranges would each have?

If four oranges were divided equally between two boys, what part of the four oranges would each boy have? How many oranges would each have?

Two is half of what number?

Four is half of what number?

One is half of what number?

Three is half of what number?

If an orange were divided equally among four boys, what part of the orange would each boy have?

If four oranges were divided equally among four boys, what part of the four oranges would each boy have? How many oranges would each boy have?

If eight oranges were divided equally among four boys, what part of the eight oranges would each boy have? How many oranges would each boy have?

One is one-fourth of what number?

Two is one-fourth of what number?

Jamie has two two-cent pieces of money and three cents. How much money must he earn to have nine cents?

A boy had nine clothes-brooms to sell. When he had sold all but two, how many had he sold?

If you bought two papers of needles for six cents, and gave in payment a five-cent piece and a three-cent piece, how much change should you receive?

For eight cents, how many plums at three cents each can you buy, and how many cents will you have toward buying another plum?

For seven cents, how many tops at four cents each can I buy, and how many cents will be left?

### Six and Three.

Show me six blocks. Now show me half as many more. How many have you shown me in all?

Show me six buttons; put with them half as many buttons as you have shown me. How many buttons have you now?

In one keg were six gallons of maple syrup, and in another three gallons. How many gallons were in both kegs?

If the postage on a package was six cents, and the postage on a letter three cents, how much was the postage for both?

Three boys started fishing; they met three other boys who went with them. If three more had gone with them, how many would have gone fishing?

James earned two cents one day, twice as much the next day, and three cents the next day. How many cents did he earn in all?

I have a five-cent piece, one cent, and a three-cent piece. How much money have I?

I have a pitcher which holds a pint and a half and three gills more. How many gills does the pitcher hold?

If I work six hours during the day, and three hours in the evening, how many hours do I work in all?

I can see four doves, two blue-birds, and three robins. How many birds can I see?

Tell me a story about six and three. Another; another; another.

Write: Six and three are nine.

**Three and Six.**

Show me three pencils; put with them twice as many pencils. How many pencils have you? Show me this with lines on the board; with dots on the board; with splints at the table; with squares of paper.

If I tell you *three* stories about three and six, and you tell me twice as many stories, how many stories shall we both tell?

If there were three boys on one sled, and twice as many on another sled, how many boys were on both sleds together?

If there were three milk-cans right side up on the bench, and twice as many turned down, how many milk-cans were there on the bench?

If I walk three miles in this direction, and you travel twice as far in the opposite direction, how far apart shall we be?

If a pen and pen-holder cost three cents, and a bottle of ink cost six cents, how much do both cost?

If you have three half-dollars and I have six half-dollars, how many half-dollars have we both together?

Tell me about three hens and six hens; about three lamps and six lamps; about three flags and six flags; about three combs and six combs; about three saws and six saws; about three horses and six cows; about three robins and six swallows; about three lambs and six sheep; about three knives and six spoons.

Write: Three and six are nine.

**Nine minus Three.**

Show me nine fingers; shut down three. How many fingers do you now show me?

Here are nine cents; give me three of them. How many cents are left?

Here are nine dots arranged in several ways on the board. Erase three in each case and see how many remain.

Nine ducks were in the pond, but three went out on the bank. How many ducks were then in the pond?

There are nine dots on the card I have here. Three dots are on one half, how many dots are on the other half?

The school-bell rings nine times during the day. If it rings three times in the afternoon, how many times does it ring in the morning?

I had nine cents and bought a three-cent postage-stamp; how many cents had I left?

There were nine doves on the walk, but three flew up on the roof. How many remained on the walk?

I had nine callers to-day; three came in the morning, and the others in the afternoon. How many came in the afternoon?

A hen had nine chickens, but a weasel caught three of them. How many were left?

A boy who had nine cookies ate three. To how many boys could he give the rest of his cookies if he gave two to each boy?

Alice found nine pins; three were bent, and half of the rest had no points. How many were good to use?

Gertie had nine gold beads. She gave three of them away, lost half of the rest, and afterwards lost two more; how many beads did she have left?

Nettie had nine Easter eggs. She kept three herself and divided the rest between her sisters, giving them three apiece. How many sisters had she?

Nellie spent nine days in the city; three days were rainy,

and she stayed in the house; half of the other days and one more day she rode and walked about the city. How many more days had she to stay in the city?

Write : Nine minus three are six.

### Nine minus Six.

Here are nine lines. Cover six with your hand and tell me how many you can see.

Make nine *i*'s on the board. After you had made six, how many more had you to make?

Here are nine nuts. Give six to Mary. How many have you?

Of nine chairs in our dining-room, only six have cane seats. How many have not cane seats?

There are nine pencils on my desk. Three are not sharpened, and three are too short to use. How many are fit for use?

I spent nine cents this morning. I bought three papers of needles at two cents a paper, and spent the rest for hat-pins at a cent a pin. How many pins did I buy?

I have nine pet mice. Three are white, three are brown, and the rest are black. How many are black?

John has nine glass marbles. Two are striped with red, four are green, and the rest are purple. How many are purple.

Here are nine cents. Two cents belong to Fred, twice as many to George, and the rest to me. How many cents belong to me?

Here are nine blocks. If you put one block in a pile by itself, two blocks in another pile, and three in another, how many blocks will remain for the fourth pile?

Tell me a story for nine minus six. Another; another.

Write : Nine minus six are three.

**Nine divided by Three.**

Pick out nine blocks. Put them in piles of three each. How many piles have you?

Take nine cups. Pile them up, three in each pile, and see how many piles you have.

Distribute these nine pencils, giving three to each child. To how many children have you given them?

Here are nine cents. To how many three-cent pieces are they equal?

How many three-cent stamps can I buy for nine cents? How many three-cent pencils? How many three-cent books? How many three-cent cards? How many three-cent spools of cotton?

If a newspaper is sold for three cents, and the newsboy has taken nine cents, how many papers has he sold?

When blueberries are three cents a pint, how many pints can I buy for nine cents?

How many pints of milk can I buy for nine cents, when milk is three cents a pint?

If an apple costs one cent, and a pear two cents, how many apples and pears can I buy for nine cents?

If an orange costs two cents, and a stick of taffy one cent, how many oranges and sticks of taffy can I buy for nine cents?

If a pen costs one cent, a pencil one cent, and a star-book one cent, how many pens, pencils, and star-books can I buy for nine cents?

At each board there are three crayons. How many boards will nine crayons supply?

If Eddie earns three cents a day, how many days must he work to earn nine cents?

I have nine pieces of apple here. If three of them will make a whole apple, how many whole apples have I?

I have nine finger rings. If I should wear three on each finger, on how many fingers should I wear them?

In a barge three persons can sit on a seat; how many seats must the barge contain for nine persons?

You may tell me a story about the number of threes in nine.

Write: There are three threes in nine.

### Three Threes.

Show me three squares on the board with three dots in each square. How many dots do you show me?

Show me three triangles with a dot in each corner. How many dots do you show me?

How many corners have three triangles?

How many sides have three triangles?

On each of these three plates are three buttons which we will call apples. How many apples are on all the plates?

Show me three piles of blocks with three in a pile. How many blocks do you show me?

Show me three boxes with three splints in each box. How many splints do you show me?

Call your splints spoons, and show me three cups with three spoons in each cup. How many spoons do you show me?

If there are three birds' nests with three eggs in each nest, how many eggs are in all the nests?

In each of these boxes are three dozen crayons. How many dozen crayons are there in three boxes?

If I have three cents, and Alice has three times as many cents, how many cents has Alice?

In one can are three pints of milk, and in another are three times as much milk. How many pints of milk in the other can?

Mabel learns three new words a day. If Willie learns three times as many words, how many words does Willie learn?

I can walk three miles an hour. How far can I walk in three hours?

Here are three blocks in this row. In the longer row are three times as many blocks. How many blocks are in the longer row?

This line is three inches long. The line above it is three times as long. How long is the longer line?

One pail holds three pints. Another pail holds three times as much. How many quarts does the larger pail hold?

One pitcher contains three gills. Another contains three times as many gills. How many pints does the larger pitcher hold?

Tell me a story for three threes are nine.

Write: Three threes are nine.

### Exercise for Review.

If a bunch of envelopes costs six cents, and a stamp three cents, how much do both cost?

A fly has six legs. If he had three more legs, how many legs would he have?

Two lilies, four pansies, and three geranium blossoms are how many blossoms?

There were nine spoons in the spoon-holder, but I have taken out three. How many remain in the spoon-holder?

Nine ants were carrying off a big bug, but three of them left off to rest. How many were then carrying away the bug?

Nine flies were in the spider's web this morning, but he has eaten three. How many are left in the web?



I bought six pencils, used four, then bought seven more, and used three. How many pencils did I then have?

In the barn are three swallows' nests. If six more are built, how many swallows' nests will there be?

In my work-basket are three spools of white thread, and six spools of dark thread. How many spools of thread are in my work-basket?

If I should use two spools of white thread, and four spools of dark thread, how many spools would remain?

In a basket are nine eggs. If I use half a dozen eggs, how many eggs will there be in the basket?

If a pail holds nine pints of water, and there is in the pail a quart and a half of water, how many more pints will the pail hold?

Six and how many are nine?

Three and how many are nine?

Nine minus six are how many?

Nine minus three are how many?

Nine minus what number leaves three?

Nine minus what number leaves six?

Three girls going berrying have each a three-pint pail. If each gets her pail full, how many pints of berries will they bring home? How many quarts of berries and what part of a quart beside?

If one whistle costs three cents, what will three whistles cost?

Which will hold the more, three three-pint pails, or a four-quart pail? Two three-pint pails, or a three-quart pail? A three-pint pail, or a two-quart pail? A quart measure, or a pitcher that holds eight gills.

Which will measure the more, two pieces of lace each three inches long, or three pieces of lace each two inches long? Four strips of braid each two inches long, or two strips of braid each four inches long?

If this square box is two inches on each side, how many inches is it around the box?

If the two longer sides of this box are each two inches long, and the shorter sides each an inch, how far is it around this box?

It is two miles to the post-office, and three times as far from the post-office to the depot. How far is it to the depot?

There is nothing in this box. How much will there be in nine such boxes?

If two apples cost a cent, how much will four apples cost? six apples? eight apples?

If you and I have each four apples, but two of mine are not good, how many of yours must you give me that I may have just as many good apples as you have left?

What two numbers, one of which is twice as large as the other, make nine?

I will give a number, and you may give me the number which put with mine will make nine: two; seven; three; six; one; eight.

Give me a number which put with the number I give you will make eight: one; two; four; six; three; five; seven; eight.

Nellie bought three lemons, at three cents apiece. She gave three pieces of money in payment. What were the pieces of money?

Harry had nine cents, and spent three cents; Fred had four cents, and earned four more cents. How much more money had Fred, at last, than Harry?

If I have eight cents, and spend a cent a day, and you have none, but earn a cent a day, in how many days shall we have the same amount?

What three different numbers added together make six?

From what number can you subtract half of itself and leave two? leave three? leave four?

Two halves of an apple are how many apples?

Two halves of two apples are how many apples?

Two halves of four apples are how many apples?

Two halves of six apples are how many apples?

### Five and Four.

Take nine blocks. Separate them into two groups, one of which groups shall contain one more block than the other. How many in the larger group? How many in the smaller group? Five blocks and four blocks are how many blocks?

Show me five splints, and four splints. How many splints do you show me?

Show me five fingers on one hand, and four on the other hand. How many fingers do you show me?

Find five red squares, and four blue squares. How many squares have you found?

There are five dots on one half of this card, and four dots on the other half. How many dots are on the card?

In one hand I have five yellow disks; in the other hand I have one less than five disks. How many disks have I in both hands?

Here is a three-cent coin, a two-cent coin, and four cents. How many cents are they worth?

Alice bought five lead pencils for a cent apiece, and four slate pencils at a cent apiece. How much did the pencils cost?

James bought a book for three cents, a pop-gun for two cents, and two candy mice at two cents apiece. How many cents did he spend?

Addie made seven *l*'s on her slate, erased two, and then made four more. How many *l*'s were then on her slate?

A train of cars ran eight miles, then backed three miles, then went ahead four miles to the next station. How far was it between the stations?

One boat went up the river five miles, and another boat went down the river four miles. If the boats started from the same point, how far apart were they then?

Who thinks of a story about five and four?

Mary? Alice? Annie? Susie? Ned? John?

Write: Five and four are nine.

### Four and Five.

Four squirrels lived in the hollow of a tree, and five more squirrels had their nests in the ground, not far from the tree. How many squirrels lived quite near each other?

A man planted four acres of corn, and five acres of potatoes. How many acres did he plant?

• In the youngest class there are four girls and five boys. How many children are in the class?

Four doves were on the sidewalk, and five more alighted on the sidewalk. How many doves were then on the sidewalk?

Four lamps are in one row, and five lamps in another. How many lamps are in both rows?

A pint cup holds four gills. If a pitcher holds one gill more than the pint cup, how many gills will both hold?

Here are two two-cent coins and a five-cent coin. To how many cents are they equal?

Nellie has found four four-leaved clovers; Mary has found as many, and one more. How many four-leaved clovers have they found together?

There are four crocus blossoms in my garden, and one more than as many tulip blossoms. How many blossoms in all?

School has kept two weeks, but Hubert came only four days last week. How many days has Hubert been to school this term?

How many cents will two two-cent stamps, and a five-cent stamp, cost?

Harry and Mary were hunting for eggs; Harry found four, and Mary found one more egg than Harry. How many eggs did both find together?

Some hens and turkeys are out by my window. There are four hens, and one more turkey than hens. How many hens and turkeys are there, counted together?

Tell me a story for four and five.

Write: Four and five are nine.

### Nine minus Four.

There are nine dots in each one of these squares on the board. You may erase four dots in one of the squares. How many dots remain? Erase four in another square. How many are left? Erase four in each square. How many dots are in each square now?

If there are nine dots in a square, and four are erased, how many dots remain?

There are nine lines on each of these boards. Erase four lines on each board. How many remain on each board?

Show me nine squares of paper. Put four squares under the table. How many squares are left?

Show me nine horses. Drive away two spans. How many spans and what part of a span remain?

I have nine gloves. If I send away two pairs to be cleaned, how many pairs of gloves are left, and what part of a pair, beside?

A boy who had nine rabbits sold three and gave away one. How many did he then have?

A boy playing ninepins knocked four ninepins down with the first ball. How many ninepins remained standing?

Nine boys were playing base-ball. Four of the boys left the game. How many boys were left to play?

James earned three cents a day for three days, and spent four cents. How many cents had he then?

There are three boys and six girls in my middle class. Four of the class have paid their book-rent. How many have not paid their book-rent?

Tell me a story for nine minus four.

Write: Nine minus four are five.

### Nine minus Five.

Take nine blocks. Who will find soonest how many blocks remain after taking five away? Tell me a story for this fact. Tell me a story for nine pens minus five pens; nine tops minus five tops; nine bells minus five bells; nine cups minus five cups; nine books minus five books; nine plates minus five plates; nine cents minus five cents; nine sheep minus five sheep; nine buns minus five buns.

There are nine shelves to my bookcase; five are wide and the others narrow. How many are narrow?

If a milk-can holds nine quarts, and five quarts have been sold, how many quarts of milk remain in the can?

Harry peddles newspapers. He has nine papers left; five are dailies, and the rest weeklies. How many are weeklies?

Ned has a cent each day for carrying the milk. If he has carried the milk nine days, how many cents more than five cents ought he to receive?

I have here a two-cent piece, two three-cent pieces, and a cent. If I give you a three-cent piece and a two-cent piece, how many cents shall I have?

Henry has been to school nine days. If the school-week is five days, how many days over a week has he been to school?

I bought nine cents' worth of stationery this morning, and paid for it with a five-cent piece and some two-cent pieces. How many two-cent pieces did I pay?

Write: Nine minus five are four.

### Nine minus Nine.

Robert had nine marbles. He lost five, and gave away four. How many marbles did he then have?

Mary invited nine little girls to supper. Two sat at one end of the table, three on each side of the table, and one sat beside Mary at the other end of the table. How many more little girls were there to be seated?

If I have nine cents, and buy a top for John for four cents, and some nuts for Annie for five cents, how many cents have I left?

Nellie had nine paper dolls. She gave away seven, and the dog chewed two. How many paper dolls did she then have?

There were nine rabbits in the yard, but when a dog ran into the yard three ran into the stable, and six scampered under the piazza. How many were then in the yard?

We had nine little chickens, but a weasel caught two, a hawk caught one, three got drowned, and three others ate something which killed them. How many of our nine chickens have we now?

We had nine cats when we lived on the farm; three were white, two were black, four were gray, and the rest yellow. How many were yellow?

Nine children owe me for their writing-books. If seven

pay me to-day, and two to-morrow, how many will still owe me?

If a farmer has only nine quarts of oats, and gives his horse a quart each meal for three days, how many quarts will he have left?

If I have nine envelopes, and I send off three letters one day, four letters the next day, and two letters the next day, how many envelopes shall I have left?

Tell me a story for nine minus nine.

Write: Nine minus nine is none.

### Nine Ones.

Here are nine cards, with a dot on each card. How many dots are there?

There are nine slates on the desks, and a pencil on each slate. How many pencils are there in all?

Each slate pencil cost a cent. How many cents did the nine slate pencils cost?

How many cents would nine sticks of candy cost, if each stick of candy cost a cent?

Nine boys have each a knife. How many knives have they together?

Charlie receives a cent for every newspaper he sells. How many cents will he receive for selling five newspapers in the morning and four newspapers in the afternoon?

A man earns a dollar a day. If he works three days a week for three weeks, how many dollars will he earn?

If each bottle has a stopple, how many stopples will nine bottles have?

If I send off four letters a day for two days, and one letter the next day, how many envelopes shall I need for my letters?

Write: Nine ones are nine.



**Nine divided by One.**

Take nine buttons. Put one button into each box. How many boxes does it take?

Mary has nine *i*'s to make. If she writes one *i* on a line, how many lines will it take?

If you have nine erasers, and put one at each board, how many boards can you supply with erasers?

How many days will it take you to earn nine cents, if you earn a cent a day?

Johnnie wants a watch, which costs five cents, and two glass marbles, which are two cents apiece. If he earns a cent a day, in how many days can he earn enough to buy the watch and the glass marbles?

Harry earns three cents a day, Willie only one cent a day. How many more days will it take Willie to earn nine cents than it takes Harry?

Oranges are three cents apiece, plums only a cent apiece. How many more plums than oranges can you buy for nine cents?

How many more vases at a dollar a vase can I buy for nine dollars, than vases at three dollars apiece?

**Nine divided by Nine.**

How many nine-cent loaves of bread can I buy for nine cents? How many nine-cent books? How many nine-cent toys? How many nine-cent pictures? How many dozen pencils, at nine cents a dozen? How many slates, at nine cents apiece? How many dozen pens, at nine cents a dozen? How many quarts of berries, at nine cents a quart? How many pounds of dates, at nine cents a pound? How many half-pounds of candy, at nine cents a half pound?

If it takes nine buttons for a boot, and Nellie has but nine buttons, how many boots can she supply with buttons?

I have some scales which will weigh anything not heavier than nine pounds. How many packages, nine pounds each, can I weigh at once with the scales?

If starch is put up for sale in nine-pound packages, how many packages must I buy to purchase nine pounds of starch?

### § 30. COMPARISON OF NINE WITH NUMBERS KNOWN.

There are nine little girls playing "drop the handkerchief," and nine boys playing ball. How many more girls than boys are there?

Here are nine cards on the table, and there are nine balls on the desk. How many more cards than balls are there?

I have two three-cent pieces, and three cents; Annie has four two-cent pieces, and one cent. Which has the more money?

On my boot there are nine buttons; on Nellie's there are eight. How many more buttons are there on my boot than on Nellie's?

I sold nine pencils to one class this morning, and eight to another class. How many more pencils did I sell to one class than to the other?

George has nine chickens, and eight ducks. How many more chickens than ducks has he?

There are nine doves on the roof, and seven on the walk. How many more doves are on the roof than on the walk?

Nine new tin pans have blown off of the bench, and seven remain on the bench. How many more have blown off than remain on the bench?

Nine hay-cocks have blown over, but seven are left standing. How many more have blown over than are left standing?

Harry's bedtime is nine o'clock; Jennie's is seven o'clock. How many hours later is Harry's bedtime than Jennie's?

Sarah has picked nine quarts of strawberries; Irene has picked but seven quarts. How many more quarts has Sarah picked than Irene?

A bicycle will run nine miles an hour; a horse will go six miles an hour. How many more miles an hour will a bicycle go than a horse?

I bought some black-headed pins for nine cents a dozen, and some needles for six cents a paper. How much more did the dozen pins cost than the paper of needles?

You are to have a vacation of nine weeks; I am to have one of six weeks. How many more weeks do you have than I?

Nine children are busy doing number-work; six others are writing. How many more are doing number-work than writing?

It is nine miles to the lake, and six to the mountain. How much farther is it to the lake than to the mountain?

John earned nine dollars doing errands in vacation; Fred earned five dollars. How much more money did John earn than Fred?

In one field there are nine acres; in another there are only five acres. How many more acres in one field than in the other?

Edward can name nine different numbers; Susie can name but five. How many more numbers can Edward name than Susie?

Nettie brought me nine different kinds of leaves this morning. I expected she could find only five different kinds of leaves. How many more did she find than I expected she would?

Bennie has finished nine pages of his writing-book; Lizzie has finished but five of hers. How many more pages has Bennie written than Lizzie?

Here are nine blocks, and here are four blocks. How many more blocks are in one pile than in the other?

There are nine lamps up and down Main Street; no other street in the village has more than four lamps. How many more lamps has Main Street than any other street in the village?

There were nine birds' nests in the trees about our house, last year; this year I have seen but four. How many more were there last year than this?

The train got in at four minutes past three, and left at nine minutes past three. How long did it wait?

I bought at the bakery a nine-cent loaf of bread, and a four-cent roll. How much more did I pay for one than for the other?

Ned bought a blank-book and a pencil this morning. He gave nine cents for the book and three for the pencil. How much more did he give for the book than for the pencil?

Alice is nine years old; her little sister is three years old. How much older is Alice than her sister?

I have a long, narrow book; it is nine inches long, and three inches wide. How many more inches in its length than in its width?

In one dish there are nine bunches, of grapes, and in another dish there are three bunches of grapes. How many more bunches in one dish than in the other?

I bought a quart of strawberries for nine cents, and a pint of milk for three cents. How much more did I pay for the strawberries than for the milk?

I bought a bottle of ink for nine cents, and a pen for two cents. How much more did I pay for the ink than for the pen?

I have a pail which holds four quarts and a pint. How many more pints does it hold than a quart measure?

Jennie found nine straight pins, and two bent ones. How many more straight ones did she find than bent ones?

Lilian has taken nine lessons on the piano, and Mary two. How many more lessons has Lilian taken than Mary?

In the street-car to-day there were nine persons on one side, and two on the other side. How many more persons were on one side than on the other?

In the harbor there are nine sail boats, and one boat without a sail. How many more boats are there with sails than without?

One hen has nine chickens; another hen has only one chicken. How many more chickens has one hen than the other?

Ida has nine sticks of candy, and her little brother has only one. How many more sticks of candy has Ida than her brother?

There were nine boys, and only one little girl, in one of my classes. How many more boys than girls were there in the class?

There were nine persons in our room yesterday, and only one chair. How many more persons than chairs were there?

Nine is how many more than one?

One is how many less than nine?

Nine is how many more than two?

Two is how many less than nine?

Nine is how many more than three?

Three is how many less than nine?

Nine is how many more than four?

Four is how many less than nine?

Nine is how many more than five?

Five is how many less than nine?

Nine is how many more than six?

Six is how many less than nine?

Nine is how many more than seven ?

Seven is how many less than nine ?

Nine is how many more than eight ?

Eight is how many less than nine ?

Nine is how many more than nine ?

Nine is how many less than nine ?

I have made one pen-wiper. How many more must I make to have nine ?

Hattie has two dolls ; Jane has nine. How many more must Hattie receive to have as many as Jane ?

Flora has only three words written ; Alice has nine. How many more words must Flora write to have as many as Alice ?

I have four cents. How many more cents must I have that I may buy a yard of cambric for nine cents ?

Cyrus has five cents ; his sister has nine cents. How much must Cyrus earn that he may have as much money as his sister ?

Ellen has six picture books. How many more must she get that she may have nine ?

Lottie is going away to stay a week. If she should stay nine days, how many days over a week would she stay ?

Fred has picked eight quarts of berries. How many more quarts must he pick that he may have nine quarts ?

Nine is one more than what number ?

Nine is eight more than what number ?

Eight is one less than what number ?

One is eight less than what number ?

Nine is two more than what number ?

Nine is seven more than what number ?

Seven is two less than what number ?

Two is seven less than what number ?

Nine is three more than what number ?

Nine is six more than what number ?

Six is three less than what number ?  
Three is six less than what number ?  
Nine is four more than what number ?  
Nine is five more than what number ?  
Five is four less than what number ?  
Four is five less than what number ?  
Nine is nine more than what number ?

### Exercise for Review.

I bought two spools of thread at three cents apiece, and three needles at a cent apiece. How much did I pay for all ?

A man bought a roll of tape for five cents, and a thimble for two cents, and sold them for nine cents. How much did he gain ?

I sold a man a pint of blueberries for four cents, and a pint of raspberries for three cents, and he sold each for a cent more a pint. How much did he gain ?

A man bought four paper dolls for a cent, and then sold them for a cent apiece. How much did he gain ?

Joseph bought a toy ship for five cents, and a banana for three cents, then sold his ship for as much as he paid for both ship and banana. How much did he get for his ship ?

A boy who was selling fruit bought four pears for a cent, and six apples for a cent ; he sold his pears for a cent apiece, and his apples at two for a cent, how much did he gain ?

A man bought oranges at three cents apiece, and sold them for five cents apiece. How much did he gain on four oranges ?

A merchant bought sugar for seven cents a pound, and sold it for nine cents a pound. How many pounds did he have to sell to gain eight cents ?

I had eight cents, and spent half of my money, then earned two cents more. If I spent half of what I then had, how much did I spend?

A peck basket holds eight quarts. How many quarts will a half-peck basket hold?

If tomatoes are three cents a quart, what will three quarts of tomatoes cost?

I bought a yard of narrow ribbon for three cents, a silver-headed pin for two cents, and some tissue paper for four cents. How much did I pay for what I bought? I gave in payment three pieces of money that were just equal to nine cents. What may the three pieces of money have been?

One-half of four apples put with one-half of six apples will make how many apples?

One-fourth of eight apples put with one-fourth of four apples will make how many apples?

Two-fourths of eight splints put with two-fourths of four splints will make how many splints?

A toy balloon could be bought for eight cents. Roy had only one-fourth enough money to pay for it. How much more money did he lack?

I bought some fruit for eight cents, which was twice as much as I expected to pay for it. How much did I expect to pay for the fruit?

It is two miles to the village, and four times as far to the beach. How much farther is it to the beach than to the village?

Lizzie has seven dolls; if she had one more she would have twice as many dolls as Mary. How many dolls has Mary?

Mira has three cents. If I had one more cent I should have three times as many cents as Mira. How many cents have I?



John can earn four cents a day; Susie can earn three cents a day. How much more money will John earn in a week than Susie?

A man bought two sheep at three dollars apiece, and gave in payment a five-dollar bill and a two-dollar bill. How much money ought he to receive back?

I bought two roses at two cents apiece, a bunch of violets for three cents, and a pond-lily for a cent. I gave in payment a five-cent piece and two two-cent pieces. How much change ought I to receive?

In one nest there were three eggs, in another two eggs, and in another four eggs. If I left the nest-egg in each nest, how many eggs did I take away?

I can buy five paper-wrappers for six cents; each paper-wrapper has a one-cent stamp on it. How much do I pay for the paper of which the wrappers are made?

I can buy four envelopes for five cents, each envelope with a one-cent stamp on it. How much do I pay for the envelopes themselves?

I can buy two envelopes for seven cents, each envelope with a three-cent stamp on it. How much do I pay for the envelopes themselves?

I have a table that is three feet wide, and nine feet long. The length of the table is how many times its breadth?

One day I read in a book from page three to page nine (both pages included); how many pages did I read?

Nellie is six years younger than Bennie, and four years younger than Charlie. How much older is Bennie than Charlie?

We had eight children to tea last evening; they consisted of an equal number of boys and girls. How many were boys? How many were girls?

If a snail creeps three inches in half a minute, how many inches will it creep in a minute?

If I write every morning from nine o'clock until twelve o'clock, how many hours shall I write in three days?

Each year has a spring, a summer, an autumn, and a winter. How many seasons are there in a year? How many seasons in two years?

I was at home two years excepting one spring and one autumn. How many seasons was I at home? Name the seasons I was at home.

If a ship sails eight miles an hour, and a horse travels six miles an hour, how much farther than the horse will the ship go in four hours?

Two boats sail toward each other, each at the rate of three miles an hour. If one starts an hour before the other, how much more than half the distance between the two boats will one boat go than the other?

Here are eight cents, with which you may buy two pounds of fish at four cents a pound. How much change should you bring back?

Here are nine cents with which you may buy three pounds of soup beef at three cents a pound. How much change should you bring back?

Here is a five-cent piece and a three-cent piece which you may take to buy a pound of mutton at seven cents a pound. How much change should you bring back?

Here are two three-cent pieces which you may take to buy a bunch of beets at five cents a bunch. How much change should you bring back?

Here is a five-cent piece and a two-cent piece with which you may buy a head of lettuce for six cents and bring back the money you have left. How much money will you have left?

Here are three three-cent pieces which you may take to buy seven pounds of salt at a cent a pound. How much money will you have left?

Here are two two-cent pieces and a five-cent piece which you may take to buy two pounds of soup beef at four cents a pound. How much change should you bring back?

I bought a bunch of beets for five cents and paid for it with three pieces of money. What may the three pieces have been?

I bought two cream cakes at three cents each and paid for them with two pieces of money. What were the two pieces of money if they were equal? if they were unequal?

I bought three bananas at three cents each and paid for them with three pieces of money. What were the pieces of money if they were equal?

The sum of two numbers is nine, and the smaller of the two numbers is four; what is the larger of the two numbers?

The sum of two numbers is nine, and the larger of the two numbers is seven; what is the smaller of the two numbers?

The sum of two numbers is nine, and the smaller of the two numbers is three; what is the larger of the two numbers?

Tom has three marbles, and George has three times as many. How many marbles has George?

The difference between two numbers is three, and the smaller of the two numbers is six; what is the larger of the two numbers?

The difference between two numbers is five, and the smaller of the two numbers is four; what is the larger of the two numbers?

The difference between two numbers is one, and the larger of the two numbers is nine; what is the smaller of the two numbers?

The difference between two numbers is five, and the larger of the two numbers is nine; what is the smaller of the two numbers?

**One-Third.**

Into how many parts have I divided this circle? (**Three.**)

Into what kind of parts? (**Equal parts.**)

Who can fold this piece of paper so as to divide it into three equal parts?

Who can fold this string so as to divide it into three equal parts?

Divide this strip of paper in the same way.

Show me one of the three equal parts into which the circle was divided.

It is a *third* of the circle.

Show me another third of the circle.

Show me the other third of the circle.

Show me a third of the strip of paper; a third of the string; two-thirds of the string.

Divide this square I have drawn on the board into thirds.

Divide the circle beside it into thirds.

Divide this triangle into thirds by drawing lines from the vertex to the base.

Show me what you think to be one-third of this table; one-third of your slate; one-third of this desk; one-third of this blackboard; one-third of this three-inch line. How long is one-third of the three-inch line?

Take three blocks. Divide the number into three equal parts. Show me one-third of three.

Take six blocks. Divide the number into three equal parts. Show me one-third of six.

Take nine blocks. Divide the number into three equal parts. Hold up one-third of nine blocks.

Who knows how many one-third of three is? One-third of six? One-third of nine?

Write: One-third of three is one. One-third of six is two. One-third of nine is three.

## CHAPTER IX.

### FIGURES. GENERAL REVIEW.

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#### §31. FIGURES AND REVIEW.

Write the word that shows this number (one) is meant.

Who will write the number in another way?

All may make the figure 1.

I have three pencils. How many more must I have to make five?

I owe Ned five cents. I have two three-cent pieces which I will give him. How many cents should he give me back?

Three things and how many more things make five things? make seven things? make six things? make eight things?

How many fingers have you on your right hand, beside the thumb? Put a mark on the board for each finger. How many marks have you made?

I will make a figure for the number you have shown me.

Hold up four cards. (Teacher makes the figure 4 on the blackboard.)

Show me four spools. (Teacher makes the figure 4.)

For how many fingers did I make this figure?

For how many cards did I make this figure?

For how many spools did I make this figure?

What is this figure?

Show me the number of blocks for which this figure stands; the number of sticks; the number of children; the number of desks.

How many did you show me in each case?

Write the word for which this figure stands.

Make this figure on your slates.

---

Three and three are how many?

Three and how many are six?

Four and two are how many?

Two and how many are six?

Six minus three are how many?

Six minus two are how many?

Three and how many are five?

One-half of six is how many more than one-half of four?

One-half of six and one-half of four are how many?

I have here two three-cent stamps. How much money did they cost? I paid for them with two pieces of money. What may the two pieces of money have been?

I bought two oranges last week at three cents apiece. What change ought I to have received, if I gave in payment two two-cent pieces and a three-cent piece?

John went down to his father's shop four times in the morning, and twice in the afternoon. How many times did he go altogether?

Four baby carriages and how many more baby carriages make six baby carriages?

Two and how many more are six?

Six pieces of pie less four pieces of pie leave how many pieces of pie?

Six peanuts less two peanuts leave how many peanuts?

How many pints in three quarts?

If you have two pints of milk, how many quarts of milk must you buy that you may have six pints of milk?

We get six eggs every day. If we use two in the morning and two at noon, how many are left?

Mary has four dollars; I have six. How many more dollars have I than Mary?

How much money must I pay for three two-cent stamps? for three three-cent stamps? for nine one-cent stamps? for a half dozen postal cards? for a five-cent stamp and two two-cent stamps?

Find all the twos you can in six. All the threes you can in six. Show me one-half of six; one-third of six.

Tell me a story for what I show you.

---

Put seven marks on the board.

Write the word *seven*.

This is the figure 7.

Show me the number of marks for which this figure stands.

Show me the word that means the same as this figure.

See how many blocks I show you. (Seven.)

Make the figure that shows this number is meant.

Make the figure that shows this number of balls is meant. (Seven.)

This number of shells. (Seven.)

*This* number of shells. (One.)

*This* number of shells. (Four.)

How many different figures have you made? Which is the prettiest? Which is the easiest to make? Which stands for the most things? Which can you do quickest, put seven marks on the board, write the word *seven*, or make the figure 7?

I have four cents and Eva has five cents. We are going to put our money together to buy some sweet crackers. How many cents' worth of crackers can we buy?

Five oyster-shells and four oyster-shells are how many oyster-shells?

Tell me a story for five and four.

If you have nine apples and I have five apples, how many more have you than I?

If you give me two of your apples, who will have the greater number then?

Nine less two are how many more than five and two?

Ralph has nine cents. Lizzie has five cents. How many cents must Ralph give Lizzie that each may have the same number?

In an orchard there are nine trees. If there are two rows of four trees each, how many trees are there besides? Six of these trees blossomed. How many had no blossoms?

I have in my purse a five-cent piece and two two-cent pieces. How many cents have I in my purse? I shall spend my five-cent piece for a bottle of ink. How many cents shall I then have?

Mary is nine years old and Harry is seven. How much older than Harry is Mary? Annie is two years old. How much older than Annie is Mary?

I have here three rows of beans with three beans in a row. How many beans have I?

I have nine cents and Eva has three three-cent pieces. Which one of us is the richer?

If one spool of thread costs three cents, what will three spools of thread cost?

How much will three pints of milk cost at three cents a pint?

It took a man a week and three days to lay a piece of wall. How many days did it take him?



If I can earn a cent every day, how many days over a week must I work to earn nine cents?

If a boy earns a dollar a month, and spends half of what he earns each month, how many months must he work to save four dollars?

If a newsboy buys a paper for four cents and sells it for five cents, how many papers must he sell to gain eight cents?

A boy, who buys apples at the rate of three for two cents, sells his apples at a cent apiece. How many cents does he gain on three apples? How many cents does he gain on twice three apples?

Make nine marks on the board.

Write the word that stands for nine.

Does any one know the figure that shows nine is meant?

I will make it for you.

Show the number of blocks for which this new figure stands.

I will show you a number of things, and you may write the figure that stands for it:

Nine; one; four; seven; nine; four; nine.

Name these figures as I point:

1; 7; 9; 4; 7; 9; 4.

Tell me a story for:

Three minus three.

Six and three.

Four and three.

Seven minus five.

Two twos.

Two threes.

Three twos.

Six minus six.

Five and four.

Nine minus seven.

Six divided by two.

Three threes.

Four twos.

Two fours.

Half a pound of sugar costs four cents. What does a pound cost at that rate?

I bought two oranges for eight cents. One orange cost two cents more than the other. What was the price of each?

If I divided four oranges among some boys, giving them half an orange apiece, to how many boys did I give them?

I gave a five-cent piece and a three-cent piece for two quarts of milk. What was the cost of a pint of milk at that rate?

I measured out a quart of water with a gill cup. How many times did I have to fill the gill cup?

If a pint of milk costs two cents, what will two gills cost at the same rate?

---

If I spend all my money, how much money shall I have left? You say I shall have none left. I will put on the board the figure 0, which always shows that *none* is meant. Its name is *zero*.

Tell me what you see in this room like it. (Eye-glasses; handle of a mug; letter O on the board.)

Make the figure with your forefinger and thumb. Put it up to your eyes so that you can look through the opening. What shape has your eye?

Notice what I do. (Show three blocks, and then remove them from sight.)

What is the answer? (None.)

Show me the figure that stands for none.

Give me an example such that the answer can be shown by this figure.

I had seven chickens. I sold five and then I sold two. How many had I left? Put on the board the figure that shows how many.

I had five minutes to wait at a railroad station. It took me three minutes to get my ticket and two minutes to say "good bye" all round. How many minutes had I left?

Express the answer on the board.

Show me the figure that stands for one more than none; that stands for four more than none; that stands for seven more than none; that stands for nine more than none; that stands for none.

Make all the figures you know on your slate, and write against each figure its name.

---

Two twos are how many?

Three twos are how many?

Four twos are how many?

Two threes are how many?

Three threes are how many?

Two fours are how many?

One-third of six is how many?

One-third of nine is how many?

One-fourth of four is how many?

One-fourth of eight is how many?

Tell me a story for:

Three and four.

Nine minus four.

Seven minus four.

Nine minus five.

Seven minus three.

Five and three.

Four and five.

Eight minus three.

---

Name two numbers which together make six.

Who can make the figure 6?

Express on the board the numbers I show you:

Six; seven; six; nine; four; six; nine.

Name each figure as I point. Which figure expresses the most?

Make the figure 6 on your slates.

Read what I show with the blocks. (Six and one are seven.)

Write this expression, using figures for six, one, and seven. (The expression stands: 6 and 1 are 7.)

Read what you have written.

Read what I show with the blocks. (Seven minus one are six.)

Express this, using figures. (7 minus 1 are 6.)

Read what you have written.

Copy these two expressions on your slates.

Think of a story whose answer is *five*.

Who can put the figure 5 on the board?

Write its name. Show me the number of marks for which it stands. What is the figure?

Read what I show you. (Four and one are five.)

Express this, using figures for the numbers. (4 and 1 are 5.)

Read what you have written.

Read what I write:

4 and 1 are 5.	5 minus 4 is 1.
5 and 4 are 9.	9 minus 4 are 5.
1 and 4 are 5.	9 minus 5 are 4.
5 and 1 are 6.	7 minus 1 are 6.
6 and 1 are 7.	6 minus 5 is 1.

Express with figures what I show you with the blocks:

Five minus one are four.

Six minus one are five.

Five minus five is zero.

Nine minus nine is zero.

Seven minus seven is zero.

Finish the sentences, using figures:

6 and 1 are	5 and 4 are
4 and 1 are	6 and 1 are
5 and 1 are	7 minus 1 are
4 and 5 are	9 minus 4 are
9 minus 5 are	5 minus 1 are
7 and 0 are	9 minus 9 is
9 and 0 are	5 minus 5 is
7 minus 6 is	5 minus 4 is

Draw a line two inches long. Divide the line into two equal parts. Erect a square on each half. How many squares have you drawn?

Write the word *two*. Express two in some other way. Who knows the figure 2? I will make it for you.

Point to the figure that stands for this number. (Two.)

Make the figure that stands for this number. (Two.)

Make the figure for each of the numbers I show you.

I will name a number, and you may point to the figure that stands for the number: One, Two, Four, Five, Six, Seven, Nine, None.

Express in figures the answers to these examples I give you.

If you model in clay five flowers and two animals, how many forms will you have modelled?

If two of the flowers should crack into pieces, and you should model four more forms, how many forms would you then have?

Eight boats were drying in the sun yesterday. To-day there are only half as many. How many boats are drying in the sun to-day?

There were nine panes of glass in the upper sash of a window, but four panes were broken by a swinging blind. How many panes remained unbroken?

I see that Harry has nine peanuts. If he gives me a third of what he has, how many will he have left?

There are nine pencils on my desk. Four of them have rubber tops, three have ivory tops, two have nothing on the top, and the rest have gold tops. How many have gold tops?

Eight children are at the board. Two are drawing, five are writing, and the rest seem to be doing nothing. How many are idle?

Harry has made nine designs with his sticks. Victor has made seven designs. How many more designs must Victor make to have as many as Harry?

---

Write in words the answers to these examples I give you:

There were six hens in the garden a moment ago, but half of them have gone to roost. How many are in the garden now?

I have eight cents in my pocket in two pieces of money. One of the pieces of money is a five-cent piece. What is the other piece of money?

Two days of last week were too cold, two were too warm, and the rest of the week was very pleasant. How many days were pleasant?

What word have you written each time? (Three.) Who will express three in some other way? Ned has made the *figure 3*. All make the figure 3. All show me the number of fingers for which the figure stands; the number of blocks; the number of pieces of crayon; the number of panes of glass.

Nellie may name a number, and the class express it.  
 Addie may name a number. Jennie may name a number.  
 Ned may name three numbers.

Willie may point to the figures, and the class may name them.

Finish the sentences I have begun :

4 and 3 are	9 minus 2 are
3 and 2 are	7 minus 3 are
5 and 2 are	7 minus 2 are
6 and 3 are	6 minus 2 are
4 and 2 are	6 minus 3 are
9 minus 3 are	5 minus 3 are
2 twos are	2 threes are
3 twos are	7 ones are
3 threes are	3 ones are

What number added to five will give eight? added to four? added to three? added to six? added to one? added to two?

Think of two numbers which added together will give eight for the answer.

What number made less by four is four? made less by three is five? made less by two is six? made less by seven is one? made less by eight is none?

Who knows what figure to write for eight? Write the figure 8.

Who has a story whose answer is eight?

Write eight figures that you know.

Name the figures you have written.

Write two more figures that you know.

Name the figures as I point.

When I point to a figure, you may point to one that stands for two more than the figure to which I point.

Show me with the blocks what these stories mean :

4 and 4 are 8.	8 minus 4 are 4.
5 and 3 are 8.	8 minus 5 are 3.
7 and 1 are 8.	8 minus 2 are 6.
6 and 2 are 8.	8 minus 1 are 7.
3 and 5 are 8.	8 minus 3 are 5.
4 twos are 8.	8 divided by 2 are 4.
2 fours are 8.	8 divided by 4 are 2.
8 ones are 8.	8 divided by 1 are 8.

Express in figures the answers to these examples I give :

A wood sawyer cuts each stick into three pieces. How many cuts does he make in sawing a stick of wood? in sawing two sticks of wood? in sawing four sticks of wood?

If peaches are selling at the rate of two for a cent, how many peaches can I buy for four cents? for two cents? for three cents? At the same rate how much will six peaches cost? will eight peaches cost? will four peaches cost?

Jessie is two years old to-day. In how many years will she be twice as old as she now is? In how many years will she be four times as old as she now is?

Four years ago Mary was only half as old as she now is. How old is she now? How old was she four years ago?

In three years Bessie will be twice as old as she now is. How old is Bessie now?

A boy worked at haying for a dollar a day. How many dollars did he earn in working a week and a half?

Harry said to Tom, "I have three torpedoes left; how many have you?" Tom answered, "I have twice as many as you, and one more; guess how many I have." How many do you guess Tom had?

How many half-pound weights must be placed in one scale-pan to balance four and a half pounds of shot in the other scale-pan?



If a locomotive goes at the rate of half a mile a minute, how many miles will it go in eight minutes? At the same rate, how long will it take a locomotive to go two and a half miles? three and a half miles? four and a half miles?

I saw on a shelf in a tin-shop a quart pan, and, arranged around the pan, as many gill cups as would be required to hold as much as the quart pan. How many gill cups were arranged around the pan?

What part of this circle do I show you? (One-half.)

What part of this square? (One-half.)

What part of two is one?

What part of four is two?

What part of six is three?

What part of eight is four?

Who can express *one-half* on the board, using figures?

I will express it. Read what I write:

$\frac{1}{2}$  of 2 is 1.

$\frac{1}{2}$  of 6 is 3.

$\frac{1}{2}$  of 4 is 2.

$\frac{1}{2}$  of 8 is 4.

One-half of 1 is one-half.

Express the last sentence, using this new sign,  $\frac{1}{2}$ .

Complete these sentences:

$\frac{1}{2}$  of 8 is

$\frac{1}{2}$  of a quart is

$\frac{1}{2}$  of 2 is

$\frac{1}{2}$  of a pint is

3 is of 6.

1 pint is of a quart.

4 is of 8.

2 gills are of a pint.

Express in figures the answers to these examples:

A hen had eight chickens. One got drowned, and one always stays in the coop with its mother. How many chickens go wandering off by themselves?

If three of the six get into the garden, what part of the number is in the garden?

How many handles have four trunks, if two of them have but one handle each?

How much will the stamps for four letters cost, if two letters require but a cent stamp each?

If two men saw three cords of wood in a day, how many cords of wood will they saw in three days?

If three newspapers sold for nine cents, what was the price of each newspaper?

If six apples sold for three cents, what was the price of one apple?

What will three and a half yards of edging cost, at two cents a yard?

Four cents will buy how many plums, at half a cent each?

Three cents will buy how many paper dolls, if two can be bought for a cent?

Nine cents will buy how many five-cent whistles? how many more cents are needed to buy another whistle?

Eight cents will buy how many five-cent bags of pop-corn? How many more cents are needed to buy another bag of pop-corn.

---

Divide this line into four equal parts. What part of this whole line is each part, if you have divided the line equally?

Who knows how to express *one-fourth*, using figures?

All write one-fourth this new way,  $\frac{1}{4}$ .

Read what I have written:

$\frac{1}{4}$  of 4 is 1.

1 gill is  $\frac{1}{4}$  of 1 pint.

$\frac{1}{4}$  of 8 is 2.

2 gills are  $\frac{1}{4}$  of 1 quart.

1 is  $\frac{1}{4}$  of 4.

$\frac{1}{4}$  of 1 pint is 1 gill.

2 is  $\frac{1}{4}$  of 8.

$\frac{1}{4}$  of 1 quart is 2 gills.

Divide the square that I have drawn on the board into eight equal triangles.

What part of the square is each triangle?

Who can express *one-eighth* a new way?

Ned may express *one-eighth* the new way in each triangle.

All express :  $\frac{1}{8}$ ;  $\frac{1}{4}$ ;  $\frac{1}{2}$ .

Write:  $\frac{1}{8}$  of 8 is 1.

1 is  $\frac{1}{8}$  of 8.

$\frac{1}{8}$  and  $\frac{1}{8}$  are  $\frac{2}{8}$ .

$\frac{1}{4}$  and  $\frac{1}{4}$  are  $\frac{2}{4}$ .

$\frac{2}{8}$  and  $\frac{1}{8}$  are  $\frac{3}{8}$ .

$\frac{2}{4}$  and  $\frac{1}{4}$  are  $\frac{3}{4}$ .

$\frac{1}{2}$  and  $\frac{1}{2}$  are 1.

$\frac{2}{4}$  and  $\frac{2}{4}$  are 1.

$\frac{4}{8}$  and  $\frac{4}{8}$  are 1.

$\frac{1}{8}$  of 1 quart is 1 gill.

1 gill is  $\frac{1}{8}$  of 1 quart.

$\frac{2}{8}$  minus  $\frac{1}{8}$  is  $\frac{1}{8}$ .

$\frac{2}{4}$  minus  $\frac{1}{4}$  is  $\frac{1}{4}$ .

$\frac{3}{8}$  minus  $\frac{1}{8}$  is  $\frac{2}{8}$ .

$\frac{3}{4}$  minus  $\frac{1}{4}$  is  $\frac{2}{4}$ .

$\frac{1}{2}$  minus  $\frac{1}{2}$  is 0.

1 minus  $\frac{2}{4}$  is  $\frac{2}{4}$ .

1 minus  $\frac{1}{2}$  is  $\frac{1}{2}$ .

Who will express *one-third* a new way? Express it.

Write:  $\frac{1}{3}$  of 3 is 1.

1 is  $\frac{1}{3}$  of 3.

$\frac{1}{3}$  of 6 is 2.

2 is  $\frac{1}{3}$  of 6.

$\frac{1}{3}$  of 9 is 3.

3 is  $\frac{1}{3}$  of 9.

$\frac{1}{3}$  and  $\frac{1}{3}$  are  $\frac{2}{3}$ .

$\frac{2}{3}$  and  $\frac{1}{3}$  are 1.

$\frac{2}{3}$  minus  $\frac{1}{3}$  is  $\frac{1}{3}$ .

$\frac{2}{3}$  minus  $\frac{2}{3}$  is 0.

Read what you have written.

Finish these sentences:

$\frac{1}{2}$  of 2 is

$\frac{1}{2}$  of 4 is

$\frac{1}{2}$  of 6 is

$\frac{1}{2}$  of 8 is

$\frac{1}{2}$  of 1 is

$\frac{1}{4}$  of 4 is

$\frac{1}{4}$  of 8 is

$\frac{1}{8}$  of 8 is

$\frac{1}{8}$  of 3 is

$\frac{1}{8}$  of 6 is

$\frac{1}{8}$  of 9 is

1 is  $\frac{1}{3}$  of

2 is  $\frac{1}{3}$  of

$\frac{1}{2}$  of 1 quart is pint.

$\frac{1}{2}$  of 1 quart is gills.

$\frac{1}{4}$  of 1 quart is gills.

$\frac{1}{2}$  of 1 pint is gills.

$\frac{1}{4}$  of 1 pint is gill.

$\frac{1}{8}$  of 1 quart is gill.

1 is  $\frac{1}{2}$  of

2 is  $\frac{1}{2}$  of

3 is  $\frac{1}{2}$  of

4 is  $\frac{1}{2}$  of

1 is  $\frac{1}{4}$  of

2 is  $\frac{1}{4}$  of

1 is  $\frac{1}{8}$  of

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No text-book is calculated to be of much help to the child during the early part of his school life. He needs none in recitation, and the work which he does by himself is represented by figures, so that a book which contains a great deal of number-work expressed in figures, and in the last part some problems with blanks for figures, — which figures he is to supply and then solve the problems, — is the only kind of book suitable for his use. The Pupils' Edition is just such a book. It contains a great many number-lessons expressed in figures. References to pages in the Teachers' Edition are given at the beginning of each lesson, so that the teacher may see at a glance at what stage of the children's progress the lesson-work should be required of her pupils. It will be observed that the Pupils' Edition is not designed to be taken up until the first nine numbers have been mastered. The Pupils' Edition is indispensable to the teacher in the matter of saving time, and indispensable to the pupil for systematic practice work.

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Whether arithmetic is studied for mental discipline or for practical mastery over the every-day problems of common life, mechanical processes and routine methods are of no value.

Pupils can be trained to logical habits of mind and stimulated to a high degree of intellectual energy by solving problems adapted to their capacities. They become *practical* arithmeticians, not by learning special business forms, but by founding their knowledge on reasoning which they comprehend, and by being so thoroughly exercised in logical analysis that they are independent of arbitrary rules.

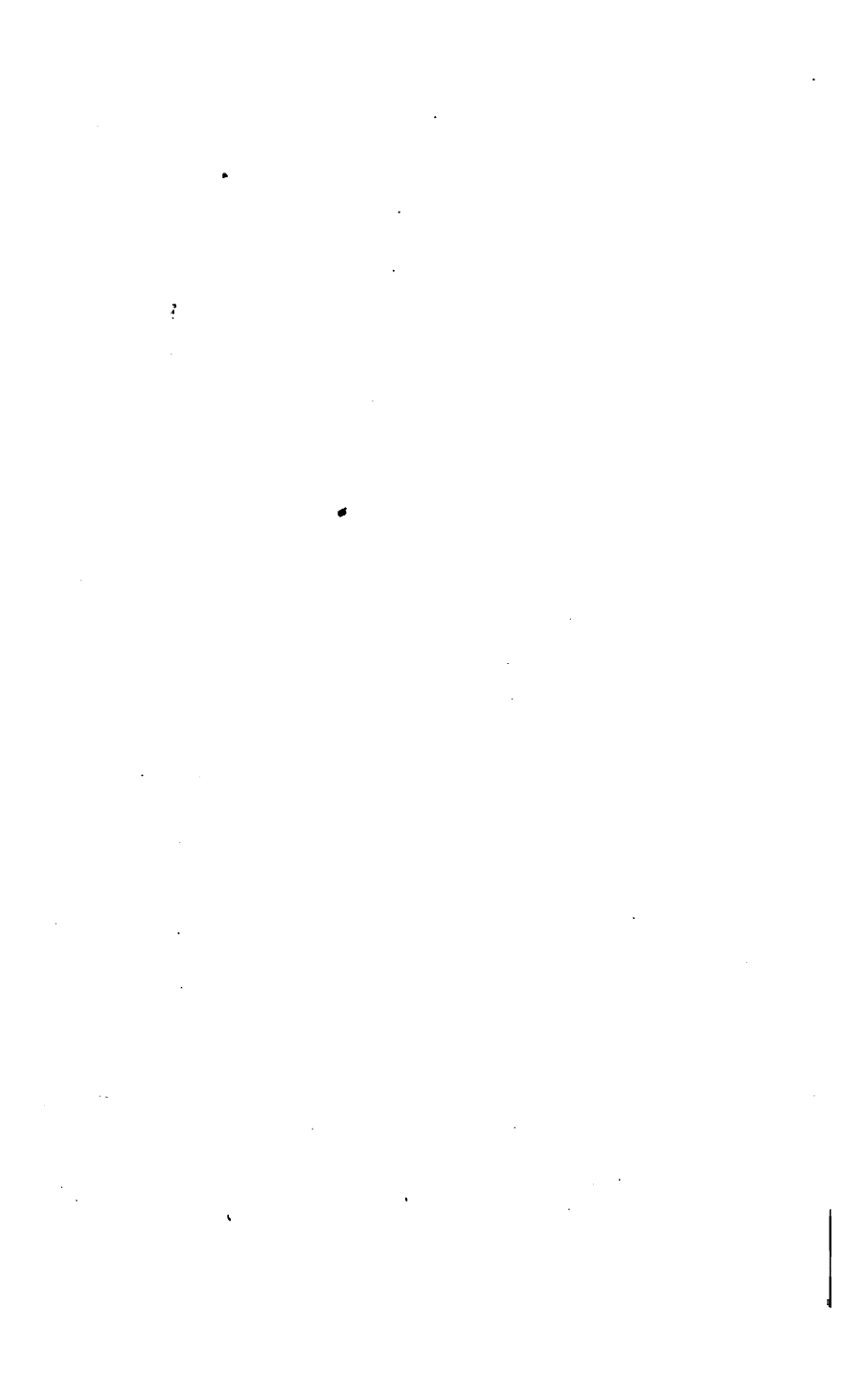
The Arithmetic contains a great number of oral and written problems, well-graded and progressive, made up for youths from ten to fourteen years of age. Definitions and explanations are made as brief and simple as possible. The definitions are to be simply discussed by teacher and pupils, not committed to memory.

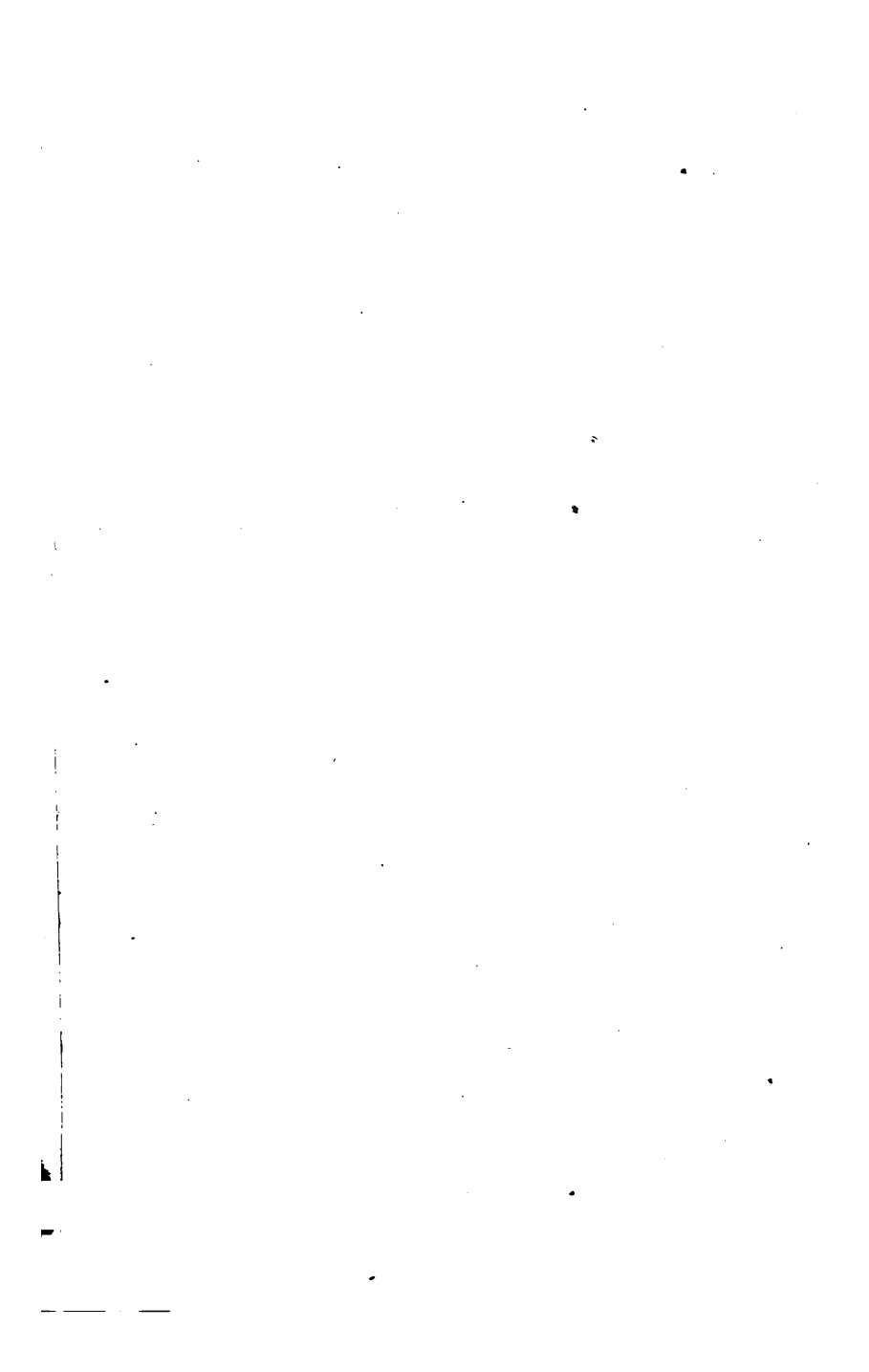
In short, the chief object in view will be gained if pupils are trained to solve the problems by neat and intelligent methods, and are kept free from set rules and formulas.

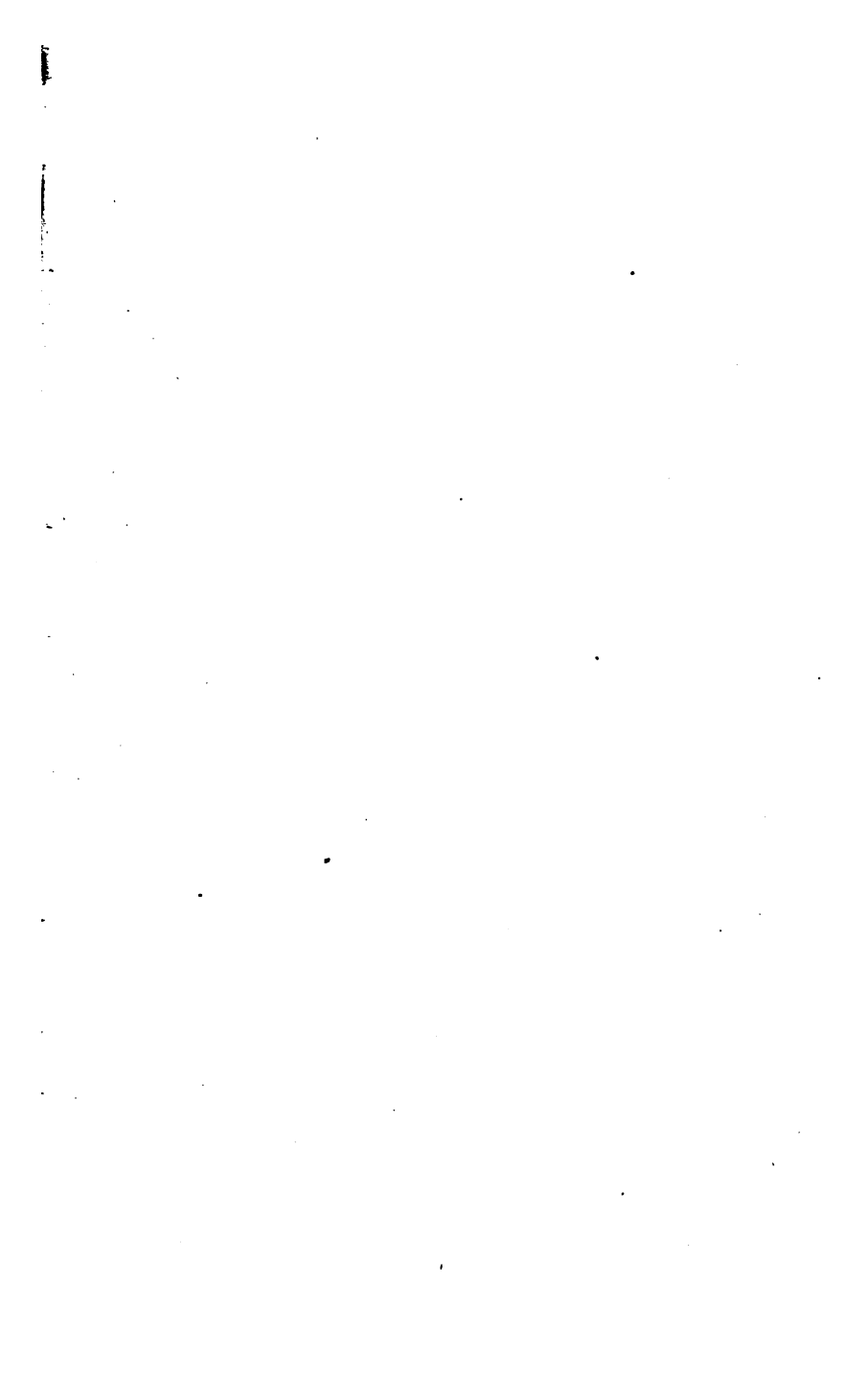
A great many number-problems are given in the first pages of the book, so that the necessary facility and accuracy in computing under the four fundamental rules may be acquired, as want of accuracy and rapidity in mere calculations distracts the attention which should be given to investigation and correct statement of clothed exercises.

The last three chapters are a short chapter on the Metric System, a chapter on Mensuration, and a chapter of Miscellaneous Problems. The Metric System is treated here because the great majority of grammar-school pupils have no time for it, while those who have can as well learn the system at this stage of their progress as earlier. The chapter on Mensuration is suited to the ability of beginners. The intention is not to give a *system of Geometry*, but to render familiar those notions of Geometry required for practical purposes.



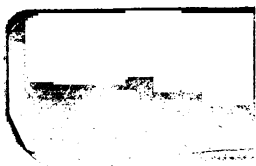








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